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U. S. Naval Reserve

Twelfth Naval District

San Francisco, Calif.

**THE
BLUEJACKETS' MANUAL**

UNITED STATES NAVY



1927

*SEVENTH EDITION
REVISED MAY, 1927*



**UNITED STATES
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WASHINGTON**

1928

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¹ For a discussion of these subjects, the duties of a lookout, masthead and deck, engine-room telegraph, breakdown flag, speed cone, fog whistle, and towing spar, see chap. 34.

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(For pipe calls, see training course for boatswain's mate, second class.)

DEPARTMENT OF THE NAVY,
OFFICE OF THE SECRETARY,
Washington, May 16, 1927.

The Bluejackets' Manual, originally prepared in 1902 by Lieut. Ridley McLean, United States Navy, and revised in 1914, 1916, and 1922, has been revised again by the Bureau of Navigation and is now issued to the service for the guidance and instruction of petty officers and enlisted men. As the training courses of the Bureau of Navigation have furnished another medium for issuing information of a specialized or technical character, the purpose of this revision has been to modernize the manual and to incorporate those things which tend to make an able seaman and a thorough man-o'-war's-man.

The manual is divided into the following parts:

Part I. For the recruit.

Part II. (A to N) The subjects which every man on board ship should know.

Part III. Rudimentary seamanship and gunnery.

Part IV. Advanced seamanship and gunnery.

Part V. Physical drills.

Part VI. Landing force.

Part VII. Miscellaneous.

The department invites criticism and suggestions from commanding and other officers in regard to the form and substance of the book. Such criticism and suggestions should be sent to the Bureau of Navigation via regular channels.

Thanks are due to the United States Naval Institute, Annapolis, Md., for their courtesy in waiving their copyright to the title, text, and plates of the Bluejackets' Manual, and to D. Van Nostrand Co., of New York, N. Y., for permission to use certain plates from Knight's Modern Seamanship.

CURTIS D. WILBUR.

NATIONAL ANTHEM

THE STAR-SPANGLED BANNER

Oh, say, can you see, by the dawn's early light,
What so proudly we hailed at the twilight's last gleaming?
Whose broad stripes and bright stars, thro' the perilous fight,
O'er the ramparts we watched, were so gallantly streaming.
And the rockets' red glare, the bombs bursting in air,
Gave proof through the night that our flag was still there.
Oh, say, does that star-spangled banner yet wave
O'er the land of the free and the home of the brave?

On the shore dimly seen, thro' the mists of the deep,
Where the foe's haughty host in dread silence reposes,
What is that which the breeze, o'er the towering steep,
As it fitfully blows, half conceals, half discloses?
Now it catches the gleam of the morning's first beam,
In full glory reflected, now shines on the stream;
'Tis the star-spangled banner; oh, long may it wave
O'er the land of the free and the home of the brave.

Oh, thus be it ever when freemen shall stand
Between their loved home and the war's desolation;
Blest with vict'ry and peace, may the heav'n-rescued land
Praise the Power that has made and preserved us a nation.
Then conquer we must, when our cause it is just,
And this be our motto: "In God is our trust";
And the star-spangled banner in triumph shall wave
O'er the land of the free and the home of the brave.



UNITED STATES ENSIGN
(STAR FOR EVERY STATE)



UNION JACK
(STAR FOR EVERY STATE)



PRESIDENT'S
FLAG



SECT'Y OF THE NAVY
ASS'T SECRETARY
COLORS REVERSED



CONSULAR
FLAG



ADMIRAL



VICE-ADMIRAL



REAR-ADMIRAL

BLUE FIELD SENIORS ONLY JUNIORS IN PRESENCE OF A SENIOR OF THE
SAME RANK FLY A SIMILAR FLAG WITH A RED FIELD



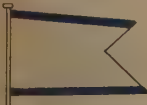
COMMODORE'S
FLAG



SENIOR OFFICER
PRESENT



COMMISSION



BROAD COMMAND
PENNANT



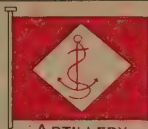
BURGEER COMMAND
PENNANT



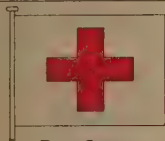
BATTLE EFFICIENCY
PENNANT



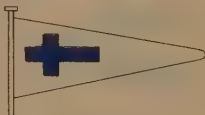
INFANTRY
NAVAL BATTALION



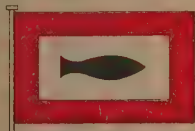
ARTILLERY
NAVAL BATTALION



RED CROSS



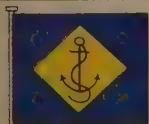
CHURCH



SUBMARINE WARNING



MERCHANT MARINE
NAVAL RESERVE FLAG



NAVAL MILITIA
DISTINGUISHING



NAVAL MILITIA
COMMISSION PENNANT



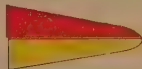
NAVAL RESERVE
YACHT PENNANT



INTERNATIONAL CODE FLAG
AND ANSWERING PENNANT

FLAG, DOT AND DASH, PENNANT NUMERALS

1



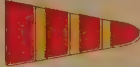
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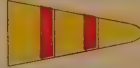
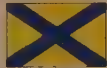
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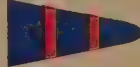
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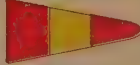
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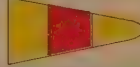
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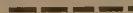
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8



9



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FLAG AND DOT AND DASH ALPHABET



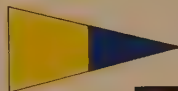
AFFIRMATIVE



FOX



BAKER



GEORGE



CAST



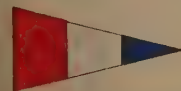
HYPO



DOG



INTERROGATORY



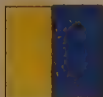
EASY



JIG

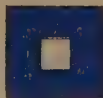


FLAG AND DOT AND DASH ALPHABET



KING

— — — —



PREPARATORY

— — — —



LOVE

— — — —



QUACK

— — — —



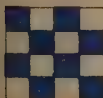
MIKE

— — — —



ROGER

— — — —



NEGATIVE

— — — —



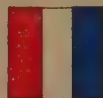
SAIL

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OPTION

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TARE

— — — —

FLAG AND DOT AND DASH ALPHABET



UNIT

— — — — —



ZED

— — — — —



VICE

— — — — —



WILLIAM

— — — — —



X-RAY

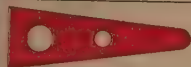
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YOKE

— — — — —

SPECIAL FLAGS, PENNANTS AND SIGNS



COURSE
PENNANT



SECTION
FLAG

(WHEN USED AS A CALL)



TURN
PENNANT



ANSWERING
PENNANT



DEPLOY
PENNANT



FIRST
REPEATER



FORMATION
PENNANT



SECOND
REPEATER



SPEED
PENNANT



THIRD
REPEATER



POSITION
PENNANT

DECIMAL AND
ONE HALF SIGN

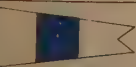
ANS



EMERGENCY
PENNANT

TACK LINE
SIGN

TACK



DESIGNATING
PENNANT

SIGNALS
SIGN



SQUADRON
FLAG

EXECUTIVE TO FOLLOW
SIGN



EXECUTIVE SIGN

(5-SEC)

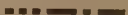
(WHEN USED AS A CALL)

FINALE
SIGN



DIVISION
FLAG

FINISH
SIGN



(WHEN USED AS A CALL)

PART ONE
FOR THE RECRUIT

CHAPTER 1

THE NAVY AS A CAREER

YOUR NAVAL CAREER

You are now beginning your naval career. You enlisted for various reasons, such as to learn a trade, to see the world, to go to sea, to improve your station in life, etc. You are young and your future is before you. Many of you have not thought seriously of your future, and probably few of you have made up your minds as to what you would really like to do. You will now have eight weeks of training, and at the end of that time you will be sent to various ships for service in our Navy as a seaman, second class. Upon arrival aboard ship, some of you will be sent to the engineer's department for duty as firemen and will be gradually developed into machinist's mates, water tenders, blacksmiths, electrician's mates, etc. The rest of you will remain in the seaman branch and gradually develop into coxswains, boatswain's mates, gunner's mates, carpenter's mates, shipfitters, quartermasters, etc. The training that starts here at the training station will be continued on board ship. In every case this training is for the sole purpose of making you a useful man, a trained man, and a leader of men.

Keep this always in mind: You are being trained to be a future leader of men. The hardest workers among you may become chief petty officers, warrant officers, and commissioned officers. The rest of you will only get as far as your work, study, and efforts entitle you to go.

EACH MAN WHO DESIRES TO BE A LEADER OF MEN MUST LEARN THE FOLLOWING ESSENTIAL POINTS

Once in a great while a man is born a leader. The rest of us become leaders by hard study and long practice of the rules of leadership handed down to us by the great leaders of the past. Below are given the rules laid down by these leaders. Study them and practice them, for your future success will depend upon your ability to master them, whether in the naval service or later in civilian life.

Obedience.—Obedience is of first importance. It is absolutely necessary in a military organization to insure success. Obedience to your superiors, obedience to regulations, must be learned first and practiced before you can ever expect to become a leader of men. Your success will depend mainly on how well you learn to obey.

Behavior.—Good behavior and a clean record are necessary for promotion to positions of leadership. Men sometimes fail of promotion to warrant and commissioned rank because of bad records of early enlistments.

Knowledge.—Knowledge comes only through study and hard work. There is no "royal road to learning." Men always respect you for what you know. It pays to know, and to know you know. Know your own job. Know the job ahead of yours.

Fighting spirit.—You know what this is. Without it, you are only a human biped who wears pants. With it, you are a live, red-blooded, go-getter—one who will succeed. Have you the grit to *stay with* a hard job? Never say "I can't." Forget there is such a phrase. Don't be a quitter. "A man may be down but never out"—until he admits it.

Reliability.—Always do what you are told to do, and do it the best you know how. Can you be depended upon, whether alone on a job or with others? Get the reputation of seeing the job through.

Loyalty.—Stick up for yourself, your officers, your petty officers, your company, your ship. As you show loyalty to them, they will show loyalty to you, and people under you will do the same. Boost! If you can't boost, don't knock.

Initiative.—This is one of the outstanding qualifications of a leader. The man with initiative takes hold of the things that need doing and does them without being told, while the other fellow is standing idly by because no one has told him what to do. A man with initiative thinks on his feet. He can be trusted to take care of an unexpected situation because he is always on the alert and thinking ahead of his job.

Self-control.—Do not fly off the handle. It nearly always gets you into trouble and always lessens the respect that others hold for you. If you lose your self-control in little things, you are sure to do so in big things. The man who can not control himself will never develop into a real leader of others.

Energy.—A lazy man never has time to do anything right or to do anything to improve himself, and he never gets far. Be "peppy." Put some drive into things. Carry a "self-starter." Don't have to be cranked every time to get started.

Courage.—A leader must have courage. He must not only have physical courage; he must have moral courage as well. He must be fearless in the face of his duty. A courageous man admits it when he is wrong and takes his medicine. He doesn't bluff. And when he is known as a man of courage he doesn't have to bluff.

Justice.—Be square. Play the game hard, but play it squarely. Give a square deal to others, and expect one in return. Act so that others can respect you as a man.

Truthfulness.—The *final test* of a man is: In a pinch, will he lie? Lying is a dismissal offense at the United States Naval Academy, and is a punishable offense in the Navy. Many a man who told the whole truth has been let off or given light punishment where the liar was punished for the offense and for lying as well.

Faith.—Believe in yourself. Trust yourself. Count on yourself. Count on yourself to be one of the best man-o'-war's-men in the whole Navy, and then go to it and make good. Trust your fellow men. They are good fellows and will meet you halfway as a rule. Believe in and trust the Navy. Splendid men have made it what it is. Do all you can to keep it as good as it is, and make it even better.

Honor.—Act so that your home folks will be proud of you, and will tell all of your friends what fine things you are doing in the Navy. Act so that others will want to be like you. Few men can survive dishonor. Remember you can never disgrace or dishonor yourself without bringing dishonor on your name, your people, and the uniform you wear.

Cheerfulness.—Smile and the world smiles with you. Smile when things go wrong. If you can't smile, at least try to. You can surely keep the corners of your mouth *up*.

Honesty.—Enough said. Without honesty your career is limited and you are sure to fail in the long run. Nobody wants to deal with or associate with a cheat.

GENERAL EDUCATION

1. The Bureau of Navigation has prepared courses of training for each rating. These courses show you what

you must know to get that rating. Besides, there are many other courses that you can use to improve your general education. *Make use of them.* In addition to helping you to become a leader of men, a general education does the following:

- (a) Increases your range of knowledge.
- (b) Gives you a better command of yourself and your personal ability.
- (c) Trains your reasoning powers and enables you to think problems out better and more easily.
- (d) Trains and stimulates your brain, and makes you more keenly alert and alive to world progress and affairs.
- (e) Gives you pleasure in life by enabling you to enjoy the great works of science, art, etc.
- (f) Gives you a wider viewpoint and opens up greater fields of opportunities.
- (g) Gives you a better chance at success in life.

YOU ENTER THE NAVAL TRAINING STATION

1. Your first few days at the training station are probably days of great confusion to you. This little talk is to straighten out in your minds the process through which you have gone and to explain why.

2. You reported at the main gate and were taken then to the receiving unit. Here you were fitted out with a uniform, took a bath, and were given a thorough medical examination. This examination was given to determine your state of health. You have to be physically sound before you can start your period of training. The dental officer examined your teeth, wrote down their condition, and if anything was found wrong you will be called in later to have this fixed up.

3. You were told how to dispose of your civilian clothes. It is best by far to get rid of them entirely.

Your uniforms are all you need, and the uniform is a suit of honor, which you can proudly wear anywhere. You can not have civilian clothes either at the station or aboard ship. Some men keep civilian clothing in lockers ashore for liberty uses, but this is unnecessary and a source of large expense. Do not do it.

4. The chaplain or his yeoman has probably had a talk with you by this time and has asked you about your education, church preference, trade or profession, athletic ability, talent for entertainment, the rating you desire, your qualifications, your home, and the address of your parents or next of kin. This information is placed on your record and is used to assist in placing you properly aboard ship. The chaplain is always glad to help you in case of difficulty or trouble. Do not hesitate or be afraid to go and talk with him freely.

5. You may be homesick and lonesome for a while. We all were. You are starting a new life, with new surroundings and new friends. Grin and bear it like we all did. No man ever succeeded by hanging on to his mother's apron strings all his life. But right here, *do this*: Write home often and ask them to write to you often. A letter from home will buck you up more than anything else.

6. You are now getting your first taste of military training. It may seem hard to you at first because it is new, but it really is not as hard as it seems. Do what you are told to do, do it quickly and cheerfully, and you will be surprised how easy this military training becomes. Look at the chief petty officers who are taking care of you. Do they look downhearted, or look as though they have suffered from military training? Ask them questions about it. You will soon find

that you will have more liberty, more privileges, and a happier existence under military training and discipline than you would have in similar positions in civil life.

7. You will be formed into a company of about 80 men and a chief petty officer will be put in charge of the company. This chief petty officer started his naval career just as you are now starting it. Through hard work and study he is now in a position of great trust and responsibility. He will teach you many useful things. Listen to him. Do what he tells you to do. Imitate his example. Ask him questions. Take your problems to him. He will be glad to help you, especially if you show him that you are really trying to help yourself.

8. You will soon be given the O'Rourke classification test. This test is given to discover the duties you can best perform. A high mark in this test will show that you will probably make a good petty officer. A low mark will show that you need a great deal of training and that you should study and work hard to make good. Do not be discouraged by a low mark, but dig in and make good.

RECEIVING UNIT

1. You remain three weeks in the receiving unit without liberty being granted. This is the hardest period of your naval career. This three weeks' detention is necessary to prevent the spread of any infectious diseases. In the training station you live close together. One man with an infectious disease could spread it to every man at the station. The doctors will examine you frequently. They much prefer keeping you well than curing you after you are

sick. They know how to keep you from getting sick, and these three weeks of restriction is one of their methods of keeping sickness down to a minimum. Realize this and don't worry about it. Your liberty days will soon arrive, and you will find that you will have more liberties than you really want.

2. You will now be vaccinated against smallpox and given typhoid prophylaxis. This is another way our doctors have of preventing you from getting sick. Our Navy doctors seldom have a smallpox or typhoid fever patient. These diseases kill lots of people in civil life every year. Our doctors just wipe out all our chances of getting these terrible diseases. We all know that these vaccinations are tough, for we have all had them, but we take them gladly because they prevent our catching these diseases.

3. As soon as your company is formed you will begin your naval training. Some of the things you must learn before you can advance your rating will be told you in the following chapters. Pay attention to your company commander. He will teach you many of these things, but this manual will also help you, as you can study it at your leisure.

PERTINENT ADVICE

1. Everybody makes mistakes. This is human. That is why we have "erasers on our pencils." When you make mistakes do not try to bluff them through or make a lot of foolish excuses. Admit your mistakes frankly and take your medicine. But do not make the same mistake twice, and try not to make too many mistakes.

2. If you do not show respect to your officers or petty officers, you can not expect them to show any respect for you.

3. Some men work without being told, some work when they are told, and some few only work when driven. The first class are easy to train, and from them will come our future leaders. The second class can be trained, and from them we get our followers. The last class can not be trained, and they are the ones whose discharge is to be hastened.

4. Yours is a profession, not a job. You do more than serve for pay alone. The Government educates and trains you and then gives you a fine position for life, for which, in turn, you agree to do whatever the Government demands.

5. Always boost. If you can not boost, at least do not knock. "Any fool can criticize. Most fools do."

6. Do not write letters to your Congressman or other people influential in political life, asking for special assignments to duty or for special favors. These people always send these letters to the Navy Department, and the fact that you have tried to get something by having a "political pull" rather than because you have merited or earned it will invariably cause your request to be turned down. If you want something special, write out your request to your commanding officer and turn it in to your executive officer. This is the proper Navy way of asking for things.

7. The efficiency of any ship depends upon the efficiency of the men aboard her. "Good men on poor ships are better than poor men on good ships."

CHAPTER 2

CLOTHING

DRAWING CLOTHING

The Government allows you \$100 for clothing upon enlistment. This amount is sufficient to purchase all the clothes you will need for some time, provided you take care of them. You will be provided with a stencil for marking your clothes, and all your clothes should be marked according to Navy regulations. These regulations will be given here, and you should learn them so that you can always keep your clothes marked correctly. These regulations show you how to mark your clothes so that none of the markings will show through and spoil the looks of your clothes. Besides this, these regulations assist the inspecting officers in inspecting your clothes, as they will know where to look for your name on each piece of clothing. You will save yourself a lot of trouble if you mark your clothes correctly at all times. If you do not do this, you will find yourself in trouble at every bag inspection. Learn now to do these things right.

REGULATIONS FOR MARKING CLOTHING

Every article of clothing shall be clearly marked with the owner's name, using black paint in marking white clothes and white paint on blue clothes as follows:

Bathing trunks.—Inside on hem on right center of back.

Blankets.—All corners, 4 inches from each edge, both sides of blankets; total, eight markings.

Cloth cap.—Inside crown.

Drawers.—On the outside of the right half waist-band.

Dungaree trousers.—Same as blue trousers.

Flannel shirts.—Same as blue jumpers.

Gloves.—On small strip of cloth to be worn on inside of wrist.

Jerseys.—Same as undershirt.

Jumpers.—Blue, on the inside, on the hem, across the center line of the front, and to the right of the center line of the back; white, inside across the back, just below the collar seam and close to it, to the right of the center line; dungaree, same as white.

Leggings.—Inside on centerpiece, lengthwise.

Mattresses.—In center, 4 inches from each end, both sides of mattress; total, four markings.

Mattress cover.—Right corners, 4 inches from open end.

Neckerchief.—In center.

Overcoat.—On lining each side of split of tail, 3 inches from and parallel to bottom; also on inside lining, middle of back.

Pillows.—Same as mattresses.

Pillow covers.—Right corners, outside on hem.

Overshirts.—On the inside on the hem across the center line of the front and to the right of the center line of the back.

Rain clothes.—Same as dungarees. Particular care should be taken that rain clothes are distinctly marked at all times.

Rubber boots.—Inside, near the top.

Rubber overshoes.—On the inside, near the top.

Shoes.—Inside, near top, or cut initials inside of heels.

Socks.—On legs, near top.

Towels.—Right corners, on hem, parallel to end.

Trousers.—Blue, on the inside of back of both legs close to the bottom hem; white, on the waistband on the inside in front and on the underside of the pocket flap.

Undershirts.—On the outside of the front, 1 inch from the bottom of the shirt and to the right of the center.

Watch cap.—Inside, one-half inch from bottom.

White hat.—On the sweatband.

PREScribed OUTFIT FOR MEN

The least amount of clothing which you must have shown in the following table. Your outfit when you leave the training station should be complete. You can have more than this amount if you so desire, provided you get only regulation clothing and you have enough space in your bag for stowing them.

Blankets, pair	1	Jumper, undress white	3
Room, whisk	1	Jersey	1
Lacking outfit	1	Leggings, pair	1
Brush, scrub	1	Mattress	1
Brush, tooth	1	Mattress covers	2
Brush, hair	1	Neckerchiefs	1
Cap, complete	1	Overcoat	1
Cap, watch	1	Overshirt	1
Clothes stops, package	3	Pillows	1
Comb, hair	1	Pillow covers	2
Drawers, heavy	2	Raincoat	1
Drawers, lightweight or medium	4	Sewing kit, as required	1
Gungarees, suits	2	Shoes, pair ²	2
Gloves, pair	1	Socks, cotton	4
Handkerchiefs	12	Toilet article, outfit	1
Hat, white	3	Towels	2
Pocket, white ¹	4	Trousers, blue	2
Pocketknife	1	Trousers, white	4
Jumper, undress blue	2	Undershirt, heavy	2
Jumper, dress white	1	Undershirts, light or medium	4

¹ Officers' mess attendants only.

² One pair to be high.

REGULATION CLOTHING

All clothing you receive from a supply officer in the Navy is regulation clothing. In every case this clothing is made of excellent material and is much cheaper than any you can purchase ashore. Many men want "tailor-made" clothes and spend large sums ashore to get them. In most cases the cloth in these clothes is not as good as in the clothes purchased from the supply officer. The pattern is usually not strictly regulation, and these men frequently get into trouble over this. Get in the habit of buying regulation clothing from the supply officer, for you will never then be wrong. Your ship's tailor can make alterations so that your uniform will fit well at very small expense.

STOWING CLOTHES

Your clothes are stowed in a bag which will be supplied you. You will be shown how to do this by your company commander. The following paragraphs will give you the rules which will help you to remember this.

SPECIAL ADVICE ABOUT CLOTHING

Below are some points about your clothing which you must learn at once and must strictly follow. Many men get into serious trouble on some of these points, and this is usually due to men not knowing how these actions are regarded in the Navy. Never do any of the following things:

(a) Never loan your clothes to a shipmate. This always leads some one to "borrow" your stuff when you are not around, and serious trouble results.

(b) Never borrow clothes from a shipmate. The reasons for not doing this are the same as for loaning clothes. In addition, this is not sanitary, and many

times men have developed serious diseases from borrowed clothes.

(c) Never give away or sell clothes. If your name is on the clothes, the man who gets them will have to explain how he got them. If you are not there to verify it, this man will be charged with "clothing of another man in his possession," and this is a serious offense. Selling clothes that are marked is bad business. You never get as much as you have had to pay for them. You will always be "broke" if you develop this habit. You are sure to be caught at it eventually, and this will result in further losses to yourself.

(d) See your company commander if you wish to dispose of any clothing. He will tell you how to do it and get permission from the proper authority for you to dispose of them legally.

FOLDING CLOTHES

1. You are given a clothes bag in which to stow your clothes. All clothes, before stowing in bag, should be folded and stopped as follows:

2. Turn all clothes, except overcoats and underclothes, inside out before folding; brush clean, roll up tightly, smoothing out all the wrinkles, and secure them with a white cotton stop about 2 inches from each end of the roll. The stops are tied in a square knot and the ends tucked inside the roll.

3. Fold clothes as follows:

(a) *Trousers, white*.—Fold one leg over the other so that seams on the inside of leg come together and pockets are on the outside. Tuck in the crotch. Turn waistband back to middle of leg and turn back top of trouser leg about 6 inches. Roll toward bottom keeping right edges even.

(b) *Trousers, blue*.—Fold one leg over the other so that seams on inside of leg come together and pockets are on the inside. Do not tuck in the crotch. Turn waistband back to middle of leg and turn back top trouser leg about 6 inches. Roll toward bottom, keeping left edges even.

(c) *Drawers*.—Same as trousers, except roll from the bottom of the leg upward.

(d) *Overshirts and white jumpers*.—Place one sleeve directly over the other, the front of the shirt being on the inside of the fold and the collar extending above the neck with the two side edges together on inside of collar. Fold collar lengthwise of shirt. Fold arms back over collar twice, and roll back from neck toward lower edge of the shirt.

(e) *Undershirts*.—Same as overshirts, except directions concerning collar.

(f) *Overcoats*.—Lay the overcoat out flat, outside up, sleeves along side, collar turned down as when worn. Fold back each half of the front over the sleeves nearest it, and whites in one pile and all the blues in another. Lay the bag out flat, the bottom toward the company commander. All bags in each rank must be laid in a straight line. Place all clothes on the bag in single layer of two rows, blue clothes to the right and white clothes to the left. (NOTE.—On board ship blue clothes are placed forward and whites aft.) Arrange clothes in the following order, commencing at the bottom of the bag, the outer ends of pieces being in the same straight line:

(a) *Blue clothes*.—Trousers, overshirts, flannel shirt, jersey, overcoat, flat hats, watch caps, socks, and leggings.



FIG. 1

(b) *White clothes*.—Trousers, jumpers, mattress covers, undershirts, drawers, towels, hats, socks, and small bags. Place rubber boots on the right, with toes even with bottom of bag, shoes in rear of boots. The whisk-broom is placed between the two rows of clothing and stood on end between the white and the blue trousers.

3. When all bags are laid out as shown above, all men will stand at attention behind their bags. The company commander will then inspect to see that each man has the required amount of clothing. Those that are short will be required to draw enough to fill up. He will then require all of you to unstop various articles of uniform and hold them up for inspection. He will inspect to see that these articles are of uniform pattern, properly marked, and clean. Clothes that are not of uniform pattern will be confiscated. Clothes not marked, or not marked according to regulations, must be marked at once. Clothes that are not clean must be scrubbed at once. See Figure 1 for bag laid out for inspection.

STOPPING CLOTHES ON LINE

1. Clothes should be secured on the clothesline by stops made fast to the eyelet holes in each piece of clothing. These stops may be bought from the supply officer or may be made of cod line, neatly wrapped, or of fine canvas threads, neatly twisted, waxed, and whipped. If two lines are used, all blue clothes must be on one line and all whites on the other. If one line only is used, all whites will be together above and the blues together below. Clothes should be stopped on with corners lapping over so they can not slip down and leave "holidays" (vacant spaces) along the line. When stopping on blankets and mattress covers, hitch the clothes stop to the upper corners.

2. Hammocks must be stopped to the line with three clothes stops, one in each end and one in the center eyelet hole. Take round turn about line with stops and tie a square knot.

3. The stops of bags should be made fast to the bottom on the inside, either sewed on securely or, preferably, passed through two eyelet holes in the bottom. The bag should be turned wrong side out before stopping on. It is most important to use strong stops with bags and hammocks and to pass them very securely to prevent them from being blown off in bad weather. It is quite inexcusable to lose articles off the line.

CHAPTER 3

GENERAL INFORMATION

HAMMOCKS, LASHING, AIRING, AND INSPECTION

1. To lash your hammock, first fold your blankets carefully and place in middle of mattress so that ends of blankets come within about 6 inches of ends of mattress. Then roll the mattress as closely as possible and cover this with hammock. Then lash with seven marlin hitches, being careful that the first and last hitches completely close the ends of the hammock over the mattress. Then twist your clews and place same under the hitches.

2. Bedding is aired once a week or oftener, as weather permits. The bugle call is sounded; all hands get hammocks, open them up well so that the air can reach every part of the bedding, blankets outboard, and pillows tucked under clews. Pass hammock lashings through the clews and then take three round turns halfway down to insure that bedding does not come loose. Tuck in all loose ends so that hammock presents a neat appearance. Place hammocks so that there are no vacant spaces or "holidays" on the rail.

3. Hammocks are inspected after they have been piped down, subsequent to airing, or as ordered. At the command Lay out hammocks for inspection, unlash and spread out the hammock, the name on the mattress being turned toward the inspecting officer. Fold the mattress and the blankets twice crosswise, placing the mattress cover 10 inches from the head and the blankets 10 inches from the foot of the mattress. Throw the



FIG. 2.—Hammock laid out for inspection

clews over the mattress and coil the lashing in the center. Five minutes after the command **Lay out hammocks for inspection**, the order **Attention** will be given. Men stand at attention at the end of their hammocks until the inspection is over. The inspecting officer inspects all blankets, mattress covers, mattresses, and pillows to see that they are properly marked according to regulations and are clean. See Figure 2 for hammock laid out for inspection.

CLEANLINESS

Our Navy is as clean as any navy in the world. Our ships, our stations, and all the men in our Navy set a standard of cleanliness that is not surpassed anywhere. It is up to you to uphold that standard. Learn now to do so. There will now be given a few rules which will help you to attain our Navy's standard of cleanliness.

First, be clean in person. Without this you can not be respected by anyone, nor can you expect to be chosen for higher positions. Take baths frequently. Use your toothbrush twice a day. Clean your finger nails. Clean up well after all your drills or work. Change your underwear every time you bathe. Keep in clean uniforms. Scrub your work clothes often and always wear clean clothes after working hours. Always keep your good uniform for quarters and inspections. Never store dirty clothes or dirty shoes in your bag. Keep your hammock clean. Keep your shoes shined. Wear a clean hat and wear it square on your head with brim up. Be a snappy man-o'-war's man all the time.

Second, keep your station clean and always act so as to help everyone else to keep his station clean. Do not throw ashes or other dirt on the deck. Never spit on

the deck. Wipe your shoes clean before entering your quarters. See that the windows, decks, walls, canvas, and sidewalks are clean and kept clean.

FIELD DAY

Field day is the term used in our Navy for a *general house cleaning*. Field days are held once every week, usually Friday. On these days all hands get busy and every nook and corner is cleaned thoroughly.

INSPECTION

Inspection by your company commander is held every day. He inspects your quarters for neatness and cleanliness. He later inspects you in formation for neatness and cleanliness. At regular intervals high ranking officers of your station make further inspections of your quarters and your company. Once every week the commanding officer himself inspects your quarters and formations. In addition to these inspections the medical officers inspect the galley and the preparation and serving of your food daily, and at regular intervals look over each recruit for signs of any diseases or sickness.

These inspections are held to guard your health so that your person and station will be kept up to the Navy standard of neatness and cleanliness and so that you will learn to be a real man-o'-war's man.

MEDICAL SERVICE

There is a dispensary at your station with medical officers on duty at all times. Sick call is held twice daily, and if you are not feeling well you can see the doctors at these times. Your company commander will

tell you how to get to the dispensary. In case of sudden illness, accident, or any other emergency you can go to the dispensary at any time, day or night. Serious cases of illness are sent to the hospital, while all others are treated in the dispensary.

The medical officers will give you a series of lectures on personal hygiene. Listen to these lectures carefully and try to do what the doctors tell you to do. You are young and inexperienced and know little of how to take care of yourself. The doctors have found this out from long experience, and they give you these lectures to help you keep your health. In civil life you would have to pay big money for the advice these doctors give you. To live a clean, wholesome life, you must think clearly and wholesomely. When you find your minds wandering on unwholesome subjects, snap out of it and turn your minds on to clean thoughts. Get interested in clean, manly subjects, as good books, athletics, shows, etc. See the really worth-while sights in the towns you happen to visit. Do not hang around the dirty places that are always handy and in which there are always people waiting to prey on you. Your position in life as a man-o'-war's man is above such things.

SHIP'S SERVICE

Besides the station "small stores" in charge of the supply officer, where you can get all your clothing at very cheap prices, your station will have the following shops, which come under the term *ship's service*, where you can get real service at much cheaper prices than shore.

Barber shop.—You get regulation hair cuts and other barber service. Your style of hair cut must be uniform. Your hair on the top should not be more than $1\frac{1}{2}$

inches long, and it should be clipped short down the sides, but not so short as to give the impression that your head has been shaved. You seldom get the regulation hair cut ashore, and you usually pay three times or more for it than you do at the station.

Tailor shop.—You get alterations to your uniforms made here very cheaply. You also get the branch marks on your sleeves and rating stripes on the wristbands put on for you.

Cobbler shop.—All work is done on shoes here for you at very cheap prices.

Pool and billiard rooms, photograph shop, and movies are available, either free or at very cheap rates.

All men should use the ship's service at all times.—A certain percentage of all money paid to these services goes to provide "movies" and other forms of recreation at the station. Similar shops ashore can not possibly do work as cheap, and what you spend there is gone forever. They usually get you in difficulties also, because they do not always do work according to regulation pattern.

IMPORTANT POINTS

Tips.—Never take tips. An apprentice seaman is already above that station in life.

Smoking lamp.—In the old days, before matches were invented, a lamp was lighted at certain times aboard ship when smoking was permitted. All smokers got their pipes lighted from this lamp. It was easy to regulate smoking in those days, for all they had to do to stop smoking was to put out the lamp. We still have the "smoking lamp" in spirit. Your station has a schedule which tells when the smoking lamp is "*lighted*" and when it is "*out*." Smoke when it is "*lighted*" but do not smoke when it is "*out*."

Lucky bag.—All clothes not called for when the clothesline is piped down, and all stray clothes found lying around are collected and put in a safe place called the "lucky bag." These clothes still belong to the person who failed to take care of them. At regular intervals the "lucky bag" will be opened and the clothes issued to the owners. If the owner was at fault by being careless with his clothes, he will be put in the report and given punishment dependent upon how careless he was.

Pay.—An officer of the Supply Corps, called the disbursing officer, keeps your pay accounts. He assigns you a pay number and pays you on the 5th and 20th of every month. When you draw small stores, he subtracts the amount of clothes you have drawn. You can always check your own account by remembering that your pay is and subtracting small stores you have drawn and 20 cents hospital fee. All of you must learn to make out your pay slips properly. The disbursing officer will refuse to pay you if the pay slips are not made out correctly, and you may have to wait until next pay day to draw your money. Sign your pay slip with your *full name*, both given name and surname. All words must be spelled correctly and there must be no erasures, blots, or writing over.

Tattooing.—Do not get tattooed. Ask any man you see who has been tattooed and he will tell you that he would give anything to have the tattooing removed. It is dangerous, costly, and an awful lot of trouble the rest of your life.

Allotments.—You can make an allotment to a bank for purposes of saving money, or to your relatives for their support. When you make an allotment, a check for this amount is mailed on the 1st of every

month from Washington to whoever you make it out to. It is the best way to save money or to provide support to your relatives, especially when you start long cruises. It costs you nothing and saves you a lot of trouble. Make use of allotments. Your company commander will tell you when you can go to the disbursing officer to make it out.

Government insurance.—This is the cheapest and best insurance for men in the Navy. You can take out any kind of policy up to \$10,000. All men having dependents should take out insurance. You must take out this insurance within 120 days after your enlistment. Your company commander will tell you how to get it.

Library.—Your station has been provided with a library of carefully chosen books so that you may have the chance to widen by reading the knowledge you are gaining daily by experience, as well as a pleasant place in which to read and write in your off-duty time. There is also provided a librarian, who can give you such library assistance as you may desire.

Deposits of money for safe-keeping or saving. The disbursing officer will hold money for safe-keeping. He will keep it in his safe, but he is not responsible in case his safe is robbed. He will also receive money for savings. You can open a regular savings account, and the Government will pay you interest on all savings at the rate of 4 per cent per year. Money deposited in a regular savings account can not be drawn out until the end of your enlistment. This makes you sure to save whatever you deposit with your disbursing officer in a regular savings account, and this system is recommended to you. It is the safest of all savings accounts, for the United States is your bank. Ask your company commander when you can see the disbursing officer to open up one of these accounts.

Friends.—Your best friends are your company commanders and officers on your station. They are trying to make a real man out of you. Behind their strict discipline is the true friendship for you that knows no limits in any emergency. You will develop friends rapidly with your new shipmates. Be careful, however, that you do not pick the occasional “shirk,” “piker,” or “four-flusher” for your friend, as such a man will invariably get you into trouble in time.

Gambling.—This is strictly forbidden, and you are severely punished when caught. Card playing, checkers, acey-ducey, chess, etc., when played during recreation periods and for sport are encouraged.

Profanity.—Men are profane usually because they lack education and need profane words to express themselves forcibly or because they are naturally evil-minded. In either case men using profane or filthy language have something lacking for development into leaders of men, and they advertise this fact loudly every time they open their mouths. Profanity is not allowed and causes trouble to the man who uses it. One captain of a ship which was cruising in Central American waters noticed that some men in ordinary conversation were calling each other by the vilest of names in loud voices with no regard for anyone. He issued an order whereby the profane man was to be put on the report for profanity, and the man who was called the vile name was to be put on the report for actually being what he had been called if he failed to take exception to it. The first case of two men being put on the report in accordance with this order caused a sensation. The man who was profane got many hours of extra duty, but the man who calmly took the vile name got a court-martial and had to prove his innocence. Several black

eyes were noticed after this, but in a week or so profanity had practically stopped.

Athletics and recreation.—The Navy is anxious to have every man go in for some kind of athletics. Nearly every kind of sport is played. Your training station period is short, but you should try some sort of game right away. Aboard ship you will be given far greater opportunities. For recreation you have "movies," swimming, "happy hours," music and athletic events. An Army and Navy Y. M. C. A. is usually near your station, and you should make use of it immediately. They give you a fine club life which would cost you a small fortune to enjoy in civil life.

Mast for requests.—The executive officer sets aside a certain portion of his time every day in order to listen to requests from members of the crew. In order that these requests be granted, it is needless to say that they must be legitimate ones. In regard to making requests, men must bear in mind two rules: First, be sure that your request is a reasonable one; second, unless it is absolutely impracticable by reason of your being on watch or through absence from the ship on duty, make your request at the time set for request mast. The executive officer is a very busy man; he sets aside a certain portion of his time especially for the purpose of listening to your request, if it be a legitimate one; consequently, he is not apt to give a very favorable reply to a request made at another time unless a man happens to have been on duty when mast was held.

Captain's mast.—The captain holds mast to investigate reports and to assign punishments. Captains also hold mast to give awards or commendation to men who have earned them.

Seeing the captain and executive officer.—Men can see the executive officer at the regular mast for requests.

They can not see him at other times without first getting permission from the drill officer or the officer of the day. No man can see the captain without first getting permission from the executive officer.

WHO IS THE CAPTAIN?

The captain is the officer in actual command of a Government vessel or station. He is a line officer, and in case of his absence or death he is succeeded by the line officer next in rank. His authority over his own ship and crew is supreme, and he is authorized by law to inflict certain punishments in every case of breach of discipline.

WHO IS THE EXECUTIVE OFFICER?

The executive officer is the line officer next in rank to the captain. He has entire charge, under the direction of the captain, of all matters relating to the personnel, routine, and discipline of the ship or station. All orders issued by him are considered as coming direct from the captain and will be obeyed as if the captain had issued them. No one has any right to ask whether a particular order came from the captain. The executive will be obeyed, and if his orders are not approved he alone is responsible. In case of absence or disability of the captain, the executive officer assumes command.

WHO IS THE DRILL OFFICER?

The drill officer is the line officer next to the executive officer, and he has general charge under the executive of the training, discipline, and care of the men in training at the training station.

WHO IS THE FIRST LIEUTENANT?

The first lieutenant has charge and is responsible for the cleanliness of the training station.

WHO ARE THE STAFF OFFICERS?

The medical officers have charge of and are responsible for the health of all individuals in the United States Navy and the conditions that make for health.

The dental officers are under the direction of the medical department and look after the dental needs of all hands.

The supply officers have charge of the purchasing of supplies for the Navy, the issuing of supplies, including food, clothing, and general naval equipment, and disbursing of pay to the Navy personnel.

The chaplain has charge primarily of the religious interests of the Navy personnel. In addition, he is interested in the welfare of the men, their general contentment, their relation to their home people and to the public.

OFFICERS ABOARD SHIP

You will find the following officers aboard ship, and their duties are given as follows:

The captain aboard ship is in command and is charged with full responsibility for the care and efficiency of the ship and the welfare of all hands. To this end, he has full authority in order to carry out these grave responsibilities.

The executive officer is next in rank to the captain. Under the direction of the captain he has entire charge of all matters relating to personnel, routine, and discipline. He has the same authority and responsibility

as discussed in a preceding paragraph, in which his duties ashore were described.

The navigator is head of the navigation department aboard ship and is responsible for the safe navigation of the ship.

The gunnery officer is the head of the gunnery department aboard ship and is responsible for the entire ordnance equipment aboard and for the proper training of all gun and torpedo crews.

The engineer officer is head of the engineering department and is responsible for all machinery for driving the ship and auxiliary and for training of all men in the engineering department.

The first lieutenant has charge and is responsible for the cleanliness of the ship. He is also partly responsible for the water-tight integrity of the ship, repair and upkeep of boats, and general care and repair of the structural parts of the ship.

Watch and division officers.—These officers have charge of the divisions aboard ship and stand watch as officer of the deck and engineer officers of the watch. They are responsible for the care and upkeep of that part of the ship assigned to their division and for the training of their men.

The senior medical officer is the head of the medical department, has charge of the sick bay, is generally responsible for the health of all hands aboard, and for conditions that make for good health. He has the inspection of the food, sleeping conditions, general cleanliness, proper ventilation, etc.

The dental officer's duties afloat approximate those ashore.

The supply officer has charge of ship's stores, certain equipment, spare parts, the general supplies of food,

clothing, etc., and the disbursement of money, as pay, together with the payment of the proper bills against the ship.

The chaplain is charged with the general religious interests of all hands, has charge of the library, assists in promoting the education of the men, and is interested in their general welfare. He frequently has additional duties with reference to motion pictures and entertainments, and often helps in promoting smokers, parties, and various forms of athletics.

CHAPTER 4

RULES AND REGULATIONS

This chapter and the one next following are of great importance to you. They deal with the principal rules of your military life. Study them carefully and learn to abide by the rules laid down. These rules are based on the Navy Regulations, which are regulations made by the Secretary of the Navy, approved by the President and in accordance with laws passed by Congress. These regulations are no harder than ordinary laws for civil life, but they are strictly enforced.

RULES OF DISCIPLINE

The rules of discipline are—

- (1) Obey orders cheerfully and willingly.
- (2) Obey the last order received from any responsible officer.
- (3) Show respect to your seniors at all times.
- (4) Obedience to these rules forms a very essential part of your duties, of your daily work, and of what you are paid for. A failure to carry them out will not only result in trouble to yourself, but also will spoil your chances for promotion.
- (5) Learn to obey orders promptly, willingly, and completely. Remember that you will soon be a leader and will be giving orders. You will be responsible then to see that those under you obey. You must first learn to be obedient yourself before you can expect to be advanced to a leader of men.
- (6) Discipline does not mean short liberties, restrictions of personal conduct, and forced obedience

to all sorts of rules and regulations. It means, rather, self-control, a cheerful obedience to necessary laws and regulations, and a square deal to your fellow men.

RESPECT FOR AUTHORITY

Respect for those placed in authority over you is absolutely essential. To show other than respect, and especially deliberate disrespect for those in authority, is a defiance of authority and one of the most serious offenses of military service.

GOOD BEHAVIOR

The Navy is a profession in which many people spend their entire lives. There is much work to be done, and success in battle, the primary aim in every military organization, necessitates implicit obedience to orders. It necessitates that men be trained to do instinctively everything that must be done in battle when under the fire of the enemy. Briefly, discipline is the habit of obedience by which a man obeys an order naturally and without question, without stopping to consider whether he wants to obey it or not; he must learn to obey simply because the order comes from higher authority. Discipline, therefore, is based upon a respect for authority. It means that you must hold higher in your esteem than anything else the authority that is placed over you. If you are disrespectful to an officer or to a petty officer, your offense lies not so much in the fact that you are disrespectful to him personally as it does in the fact that he temporarily represents the supreme authority, and it is the failure of many enlisted men to grasp this fact that often gets them into trouble. The fact that you may be a good man in your line of work does not overcome the necessity for good

behavior. The Navy differs from civil life. In most jobs ashore all that is required of you is a certain number of hours of good, hard work every day. In the Navy, on the other hand, discipline is necessary for success in battle, and the only object of the Navy is to win battles. Therefore, good behavior and implicit obedience are primarily essential. The Navy can take a good man and train him to do his work properly, but a man is required to take an oath, before enlisting, that he will obey the regulations. Many advantages, such as pay, retirement, and honorable discharges, are based more on good behavior than on skill in any particular duty. The fact is that, whatever your rating, your promotion depends on your excellence in both of these features. If you can not behave, obey the regulations, and comply with your oath, you are unfit to carry out the various work of the service, and the Navy has no time to waste on you.

THE TWOFOLD NATURE OF DUTY IN THE NAVY

When a man enlists in the Navy, no matter what rating, the nature of his duties are twofold. The duties are: *First*, his military duties, and *second*, the special duties of the rating in which he enlists.

No matter what his length of service may be or what his rating is, every recruit, every enlisted man, has certain duties of a military nature quite apart from the duties of this rating. These military duties are a part of the military service to which he belongs, and the fact of these military duties can not be too strongly impressed upon each man. Even though the duties of his rating may be such as to reduce the amount of his military duties—for example, to lessen the amount of drill—nevertheless, the military side of the profes-

sion is always present and its responsibilities are always in evidence. However expert a fireman or a machinist's mate, a yeoman, or a cook a man may be, he must realize that when he enlists in the Navy skill in his rating constitutes only part of his duty. In addition to showing that he is competent to perform the duties of his particular rating, he must place himself under military laws and regulations which are quite different from the laws which govern him in civil life. And it is the neglect of the military half of a man's duties that causes a very large percentage of the trouble he may experience in the Navy. A number of men fail to realize just what this military side of life in the Navy involves. In a general way they know that they must be obedient and respectful, but they do not seem to understand the real importance of being so. They do not realize that failure to be respectful and obedient will injure their records and ruin their chance for promotion.

REFUSAL TO OBEY

If you neglect to obey an order or refuse to obey it, you will not be sustained in your action once in a thousand times. If an officer or petty officer orders you to do a certain thing, and before it is done, another officer or petty officer orders you to do something else, it is your duty to inform the officer or petty officer giving you the second order that you have had previous orders, telling him what the orders are and who gave them to you. The officer or petty officer who gave you the second order will then decide whether you are to carry out the first orders or the second orders.

If the officer or petty officer instructs you to carry out the second orders which he himself gave, then it is your duty to carry them out. As soon as you have done so, endeavor to carry out your first orders. If

there has been any considerable change or delay, report to the officer or petty officer giving you the first orders the fact of the change or delay and the reason therefor.

If an order is received from the officer of the deck, it must be carried out without delay, as he is the representative of the commanding officer and the executive officer and is responsible for the safety of the ship. If the carrying out of such an order from the officer of the deck necessitates any considerable delay or change in your carrying out later any previous order you may have received, you should report such facts to the officer or petty officer from whom you received the first order.

RESULT OF MISCONDUCT

You must understand clearly what will be the result of misconduct. Military offenses may be divided into two general classes:

- (a) Those involving neglect of duty.
- (b) Those involving deliberate violation of orders, regulations, or instructions.

Misconduct is punished according to the nature and degree of the offense.

NEGLECT OF DUTY

Offenses under this classification may vary in nature from minor cases—as, for example, “late at muster” or “slow in sweeping down”—to some neglect, the result of which may involve collision, sinking of the ship, or loss of life—as, for example, putting the rudder the wrong way or neglecting to close water-tight doors when it is your duty to do so. Owing to the great variety of these offenses and the different kinds of “neglect of duty,” which extend all the way from mere trivialities to great catastrophes, punishment for “neg-

lect of duty" varies all the way from loss of liberty to that inflicted by sentence of a general court-martial. The object of punishing for neglect of duty is to enforce discipline, to make people careful, thorough, and reliable in whatever they do. In battle even a slight neglect or one careless act on the part of any one man may mean the difference between victory and defeat. The old maxim "Whatever is worth doing at all is worth doing well" applies more forcibly to duty on a man-o'-war's-man than to duty anywhere else. If an officer gives you an order, he counts not only upon your carrying it out, but also upon your executing it thoroughly and completely. He also relies upon your coming to him and telling him if, for any reason, you can not execute the order properly and thoroughly. This necessity of thoroughness enters into every feature of life on board ship. Neglect of thoroughness, neglect to do your duty—whatever may be your rate—may have tremendous consequences. Nelson signaled before a great battle: "England expects every man to do his duty." Even in those days it was realized that success in battle depended not only upon the captain, but also upon every individual man doing *what* he was supposed to do, and *all* that he was supposed to do. You may say, "That is all right in action, but why is such strict thoroughness necessary in time of peace?" This "little talk" is just for the purpose of answering questions such as this. In this case the answer is: "Because it is necessary 'in time of peace to prepare for war.'" It is necessary in time of peace to train everyone to do his duty thoroughly. If we didn't practice with our guns and if we didn't use our engines and our torpedoes in time of peace, we wouldn't know how to use them efficiently in time of war. All of our work in time of peace—carried on at great expense—is for the purpose of insuring our readiness when war is declared.

One of the most important features of training is the schooling of personnel in thoroughness and impressing upon everyone in the service the meaning of the word duty. Remember the old saying that "wooden ships with men of iron will defeat iron ships manned by wooden men." There is a word the meaning of which you should master at the very outset of your career—a word that, while you are in the service, you should hold sacred. That word is **duty**. You must work from "sense of duty." This means that you should do a thing not merely because you **have to** do it, or because you will be **caught** if you don't do it, but it means that you must carry out orders because it is your **duty** to carry them out. Do the things that you are ordered to do just as carefully and thoroughly when you are off by yourself as you would do them if you were being supervised.

DELIBERATE VIOLATION OF ORDERS OR REGULATIONS

Offenses of this nature are so serious that the offenders are usually tried by court-martial. In this case the offense, as a rule, lies not so much in the consequences of the act as in the defiance of authority. Discipline requires that authority be held supreme and sacred. Such offenses are severely punished because, since they are deliberate, they defy the supreme authority, and it is seldom indeed that excuses, such as ignorance, or drunkenness, or excitability, or the fact that the man who gave the order had no authority to give it, are accepted. You must accept as supreme the authority placed over you, and you must obey that authority. Obedience is a habit. It is just as easy to obey as it is not to obey. Besides, you have taken an oath to obey.

As previously stated, if you get conflicting orders it is not your business to decide which you will obey. Tell the man who gave you the last order and let him decide whether you are to obey his order or the one previously given. This decision is his privilege, not yours, and if you try to decide for yourself you will surely get in trouble.

PUNISHMENTS IN THE NAVY

Punishments may be assigned in four different ways

1. **The captain** is authorized to assign certain punishments. As a rule these are sufficiently severe to punish minor offenses only. In addition, the captain has authority to discharge you at any time for "inaptitude" or as "undesirable," provided that you are in your first enlistment.

2. **Deck courts.**—If the captain thinks you should get more severe punishment than he is authorized to assign but that your case is not sufficiently serious for a summary court-martial, he may order a deck court. Such a court is not authorized to assign more severe punishment than 20 days' confinement and 20 days' loss of pay.

3. **Summary court-martial.**—If your offense is still more serious, the captain orders you to be tried by a summary court-martial. Such a court can sentence you to 30 days' confinement and the loss of three months' pay, or to a bad-conduct discharge, or reduction to next inferior rating.

4. **General court-martial.**—In case of a very serious offense, the commander in chief or the Secretary of the Navy may order a general court-martial. This court may sentence a guilty person to imprisonment at hard labor, loss of pay, and dishonorable discharge. The prison term may vary from six months to any number of years, depending upon the offense.

CHAPTER 5

RULES AND REGULATIONS—Continued

UNAUTHORIZED ABSENCE

This is the most frequent offense committed by enlisted men. It takes numerous forms, varying in degrees from the man who is delayed in returning to the ship for reason of blockade of traffic or one who is not called in the morning to the man who deliberately remains out for months or years. It is such a common offense that some enlisted men do not consider it as a serious breach of discipline, and when they are severely punished for it they feel that they have been unfairly treated. The fact that a man deliberately overstays his leave is, of course, a serious military offense regardless of his reason for overstaying, and this fact must be clearly understood. Overstaying leave accidentally or through no fault of your own, due, for example, to a railroad wreck or to a blockade in traffic, is no offense, and your excuse will be accepted if your record is clear and your reputation such that you have never given reason for your word to be doubted. You must realize, however, that, even in the case quoted, if your record and your reputation are bad, officers who hear trumped-up excuses every day are merely human, and they may not believe your story. This is another example of the necessity for keeping your record clear. Overstaying leave accidentally, which, despite the accident, involves neglect on your part—such, for example, as oversleeping yourself—is an offense, but it is not serious provided you get back as quickly as possible after you wake up.

"Late trains" are excuses so often used that men frequently back up their own word by securing a written statement from the conductor as to how many hours the particular train was late. Such statements assist the commanding officer in selecting the "genuine excuses" from the "trumped-up" ones.

Overstaying leave deliberately for any reason whatever is a very serious offense, because it defies the authority placed over you. For example, suppose you have orders to return at 8 a. m. If at 8 a. m. you deliberately fail to return, whether it is because you want a longer liberty, or because you have some friends with you, or because of business, or sickness, you practically say: "I know I am ordered to be back, but I will stay as long as I wish and then let them punish me." In this manner you are deliberately disobeying an order, and this is a military offense of the most serious nature. So many excuses are considered for this offense that it may be well to consider some of them.

INTOXICATION

Some men give as an excuse that they were intoxicated at 8 a. m. and stayed on shore to sober up. It is unnecessary to say that there is never any excuse for your being intoxicated, but if, by any chance, you should feel intoxicated or in need of sleep when your liberty is up, remember that the ship is the best place for you. If you return to the ship in such a condition and raise no disturbance, your offense will be less serious than it would be if you had overstayed your leave. Consequently your punishment will be lighter.

SICKNESS

Men sometimes state that they were sick and bring the certificate of some doctor. If you are really se-

iously sick, that is, of course, an excuse. But a doctor's certificate doesn't always prove that fact, for the reason that occasionally men purchase fake certificates or falsify them. For this reason the commanding officer frequently checks up on such certificates, and where found to be faked or falsified the man is not only punished for the actual offense, but for attempted deception and lying to his commanding officer as well.

If you are sick and will likely not be able to return to your ship on time, the proper thing to do is to get word to the ship immediately, giving your address and condition. Then whatever is possible will be done for you. Instead of doing this, if you take affairs into your own hands, your certificate may have to be checked up and you may be punished for being over-time.

SICKNESS IN THE FAMILY

Sickness in the family is sometimes used as an excuse, but this is not a valid excuse unless you have communicated with the ship. You always have time to telephone or telegraph. If you do this before your leave has expired, it creates a presumption in your favor, especially if you have a clear record, as it gives the ship's authorities a chance to communicate with you. Moreover, it shows that you desire to comply with regulations.

REQUESTS OF THE FAMILY

Without realizing the seriousness of infractions of discipline, mothers or other members of the family sometimes persuade men to overstay leave, and they occasionally appear as witnesses before a court. Remember always that this is never an excuse. You are under oath to obey the regulations of the Navy and no

one can relieve you of that duty. Your punishment is just as serious if you remain away at the request of your mother as it would be had you remained away of your own accord.

DETAINED BY CIVIL AUTHORITIES

Men sometimes give as an excuse that they were held by the civil authorities. The law on this subject is that if men are tried and acquitted by civil authorities they are not to blame, and no punishment is assigned for the absence due to their being thus held; but if they are held by the civil authorities and found guilty of some misconduct, they have been held for reason of their own misconduct, and hence on their return to the ship they will be punished for overstaying their leave. If detained by civil authorities for any cause whatever, you should notify your ship as soon as possible, giving the facts in the case.

MISSING SHIP

It frequently happens that men overstay liberty just before a ship sails, miss their ship, and give themselves up on another ship. In this case they are punished. They lose pay and receive punishment for the entire time they are absent from naval control. This punishment is given because a man's duty is on the ship to which he is attached; there is where he is needed, and during his absence other people must do his duty. If their ship is sailing from the United States, such men are immediately declared deserters. Therefore, if your ship has sailed, try to report on board. If this is impossible report to the nearest ship or station.

' STRETCHING OVERTIME TO THE LIMIT

There is one feature about absence over leave that shows up in a very large number of courts-martial. A man gets out of money, or oversleeps, or for one reason or another finds himself overtime. Thinking he will then be punished anyway, he does not return immediately, but stays away until just before the charge of overtime becomes desertion under the belief that the punishment will be the same or that he might as well be away eight or nine days as two or three. This is the worst mistake you can make. Always return just as soon as possible. The sooner you get back the easier will be your punishment and the more likely will the officers be to accept your excuse. Officers always try to help a man who seems to be trying to help himself. It is the deliberate acts which are punished severely, and the longer you remain away the more severe your punishment will be. Never remain away because you feel that you will be punished anyhow.

DESERTION

Desertion consists in absence from station and duty with the intent to leave the service permanently. A man is guilty of desertion if at any time he shows the intention of quitting the service permanently before his term of enlistment is up. Many facts serve to indicate such intent—for example, the disposal of uniform, going away and establishing one's self and failing to make any attempt to return, etc. Much the same excuses as those offered in cases of absence over leave are given to courts as reasons for desertion. Few men realize how frequently deserters are captured. About 7 out of every 10 who desert are either

captured or voluntarily surrender. Many times deserters are captured by the civil police (who keep up with all deserters) after they have been married and have families. Frequently they are captured several years after their desertion when they think it perfectly safe to return to their homes. The civil police are all over the United States and many of them make extra money through the rewards which they receive by apprehending deserters. They keep a list of deserters, their home addresses, and other facts that assist them to recover deserters. Likewise, there are few enlisted men who really understand the effect of desertion. If men could but read the appealing letters from mothers, wives, and sweethearts concerning those men who have been taken from them to serve prison sentences because of desertion, no one would ever desert. These letters tell of the sorrow and shame of having a son or a husband in prison. Often relatives are left penniless due to the fact that a man loses all pay while in prison. Hundreds of such letters are received by the Navy Department every month. Often these letters tell how good a son, or a brother, or a husband the man has been. But rarely, if ever, do these letters avail anything, for the simple reason that the department is punishing the man for a certain specific act (deserting) which he committed, and all his goodness to his family can not move from his record this violation of the law. It often happens that a man's imprisonment is as much of a punishment to his family as to himself, but since he brought it upon himself he has only himself to blame. This is written in the hope that before deserting, before allowing your family or your sweetheart to persuade you to remain home, you will seriously consider this side of the question. There

are certain things to remember about desertion and absence over leave:

(1) It is always better to surrender than to be arrested and brought back.

(2) It is better to surrender in uniform than in civilian clothes.

(3) The sooner you surrender the better. The less time you remain out the better off you will be.

(4) There is never any excuse for an unauthorized absence of over 24 hours without communicating with the ship.

(5) There is never any excuse for desertion that can be accepted by any court.

(6) The punishment for prolonged absence over leave is nearly always a general court-martial, and if found guilty the sentence may be confinement in prison.

(7) Finally, when you are in prison your family and dependents suffer as much as you do, oftentimes more than you do, for while you are in prison at least you are fed.

(8) Imprisonment for desertion varies from one to one and a half years. This is not only a long time to remain in prison, but it is also a blot on your future career. The following is taken from a deserter's statement: "I deserted on account of my sister being sick. I could not get liberty, and I ran away from the ship and went to see my sister. I did not intend to desert, and would like to be restored to duty." This is an actual case and is typical of a very large number of statements. In this case the sentence was 18 months in prison. If the man had behaved, had had a clear record, and if his sister had really been sick enough to necessitate his presence, in all probability he could have obtained the desired permission. The question arises

whether the pleasure of remaining at home was worth the punishment of one and a half years in prison on reduced fare, at hard labor, and loss of all pay during that time.

FRAUDULENT ENLISTMENT

Many men leave the service by desertion or by receiving a bad-conduct discharge due to their own misbehavior, and then after they get outside they realize that the Navy is a fine place. They reenlist fraudulently by falsely concealing the fact that they have been in the service before. Since the fingerprint system has been in operation, every single case of fraudulent enlistment has been detected. It isn't a question of being recognized. Fingerprints are easily catalogued. They are all compared, and if you have been in the service before you will certainly be detected and sent to prison. The real offense lies in the fact that by your false representations you have led the recruiting officer to enlist you and that you receive money due to your false statements. If you have left the service without recommendation for reenlistment, the only thing to do is to endeavor to obtain permission from the Navy Department to reenlist. Any other method will land you in prison.

FINES

A number of men have dependent relatives. Whether they are sent to prison or merely are fined by a summary or deck court-martial on board ship, their allotments must cease and their relatives suffer thereby. Your money is given to you for your services. Remember that the Government and your officers had much rather not fine you. The Government doesn't

need the money. It does need your service and your good behavior; therefore, give the Government your services and keep the money for yourself and your family.

SUMMARY

- (1) Be careful always to keep your record clear.
- (2) A man with a clear record can get permission to do nearly anything within reason.
- (3) Never take the law into your own hands. Always get permission to do anything that requires special permission.
- (4) In case of unavoidable absence, always communicate with the ship immediately.
- (5) If absent overleave, remember the sooner you return to your ship the better. Don't make a bad matter worse by prolonging your absence.
- (6) No excuse that you can possibly give will keep you out of prison if you are convicted for desertion.
- (7) A large percentage of deserters are captured, sometimes years after desertion, and returned to prison. Of the number of men who desert, a larger percentage are being captured each year.
- (8) Endeavor to make good all the time.
- (9) Endeavor to learn all about your own particular duties, and then a little more.
- (10) Remember that the deliberate violation of the orders of a senior, even if he be only an acting third-class petty officer, is a defiance of the supreme authority and of the laws of the United States as well as a violation of the oath you have taken upon enlistment.
- (11) Remember that even if you have been sentenced to loss of pay by a court-martial, you may, as a rule, secure the entire remission of this loss of pay if you are eventually discharged from the service with

an honorable discharge; but if your future conduct is such as to warrant your discharge with a bad-conduct discharge you will forfeit the entire loss of pay adjudged by sentence of court-martial. If you are discharged with an ordinary discharge, you lose one-half of the pay adjudged by sentence of courts.

THEFT

In a body as large as the enlisted force of the Navy a few dishonest men are bound to be encountered. In addition to this small percentage there are some men, in other respects of unimpeachable honesty, who seem to have elastic consciences in regard to theft of clothing. To steal a shipmate's clothing is an act just as criminal as it is to steal his watch and money. Some men, too, are careless in this matter. They take another man's clothing from the line or pick them up about the deck and appropriate them to their own use. If you have another man's clothing in your possession, you subject yourself to the suspicion of theft. The Articles for the Government of the Navy establish punishment of theft with from two to four years of confinement and a dishonorable discharge. The term of confinement is served in the penitentiary. Consequently, a man after serving out his sentence leaves the Navy branded for life as a criminal. Stop to consider that if you have in your possession the clothing of a shipmate, no matter how you obtain it, unless by official authority, you may be sentenced to a term in the penitentiary. A good rule to remember is the excellent advice: "Avoid not only evil, but every appearance of evil." Some men have been known to pawn articles belonging to a shipmate with the intention of redeeming the articles at a later date and restoring

them to their owner. Needless to say, no matter what the intent may be, a man guilty of this dishonesty will be court-martialed for theft.

ARTICLES FOR THE GOVERNMENT OF THE NAVY

Articles for the Government of the Navy of the United States are articles approved by act of Congress and thus made into the law of the land for the government of the Navy. The general features of the Navy Regulations are founded on these articles. They are always posted on the ship's bulletin board. Once a month they are read at muster by the executive officer. Every person in the Navy should read these articles carefully and make himself familiar with their general nature.

REDRESS OF WRONGS

"If any person in the Navy considers himself oppressed by his superior, or observes in him any misconduct, he shall not fail in his respectful bearing toward him, but shall represent such oppression or misconduct to the proper authority. He will be held accountable if his representations are found to be vexatious, frivolous, or false. Any application for redress of wrong shall be in writing through the immediate commanding officer to the commander in chief of the fleet or squadron, or to the senior officer present, and it shall be the duty of the latter to take such action in the matter as, in his judgment, justice and good of service demand."

QUARRELS AND DISTURBANCES

"In the event of a riot or quarrel between persons belonging to the Navy, it shall be the duty of the senior

line officer present to suppress the disturbance, and, if necessary, to arrest those engaged in it even though they may be his superiors in rank; and all persons belonging to the Navy who may be present shall render prompt assistance and obedience to the officer thus engaged in the restoration of order. Should there be no line officer present, the senior officer of the Navy or of the Marine Corps who may be present shall exercise the same authority and be entitled to the same obedience."

RULES REGARDING SALUTES

See pages 259-265.

CHAPTER 6

SCHOOL OF THE RECRUIT

The following instructions will assist you in grasping the details of your infantry drills. Study and practice the different movements until you know them thoroughly. This chapter gives instructions without arms.

THE RESTS

Being at a halt, the commands are: **FALL OUT; REST; AT EASE**, and 1. **Parade**, 2. **REST**.

At the command **fall out**, the man may leave the ranks, but he is required to remain in the immediate vicinity. They resume their former places at attention, at the command to **fall in**.

At the command **rest** each man keeps his right foot in place, but is not required to preserve silence or immobility.

At the command **at ease** each man keeps his right foot in place and is required to preserve silence but not immobility.

The command being, 1. **Stand at**, 2. **EASE**, at the command **Ease**, move the left foot smartly 12 inches to the left of the right foot; at the same time clasp the hands behind the back, palms to the rear, thumb and fingers of the right hand clasping the left thumb, without constraint. Preserve silence and immobility, except that the head and eyes may be turned toward the instructor or unit commander. This command is given when it is desired to maintain a uniform appearance of the organization. (See fig. 3.)

1. Parade, 2. REST. Carry the right foot 6 inches straight to the rear, left knee slightly bent; clasp the hands naturally in front of the center of the body,



FIG. 3.—Stand at ease.
Correct position



FIG. 4a.—Parade rest.
Correct position



FIG. 4b.—Parade rest.
Common errors

fingers joined, left hand uppermost, back of hands to the front, left thumb clasped by the thumb and forefinger of the right hand; preserve silence and steadiness of position. (See figs. 4 a-d.)

To resume the attention: 1. Squad, 2. ATTENTION. The men take the position of attention.



FIG. 4c.—Parade rest.
Correct position



FIG. 4d.—Parade rest.
Common errors

EYES RIGHT OR LEFT

1. Eyes, 2. RIGHT (LEFT), 3. FRONT.
At the command right (or left) turn the head to the right (or left) oblique, eyes fixed on the line of eyes of the men in or supposed to be in the same rank. At the command front, turn the head and eyes to the front. See fig. 5.)

To the flank: 1. **Right (left)**, 2. **FACE**.

Raise slightly the left heel and right toe; face to the right, turning on the right heel, assisted by a slight pressure on the ball of the left foot; place the left



FIG. 5.—Eyes right.
Correct position



FIG. 5a.—Position of
hands for double
time

foot by the side of the right. Left face is executed on the left heel in the corresponding manner.

Right (left), half face is executed similarly, facing 45°.

To face in marching and advance, turn on the ball of either foot and step off with the other foot in the

new line of direction; to face in marching without gaining ground in the new direction, turn on the ball of either foot and mark time.

To the rear: **1. About, 2. FACE.**

Carry the toe of the right foot about half foot length to the rear and slightly to the left of the left heel without changing the position of the left foot; face to the rear, turning to the right on the left heel and right toe; place the right heel by the side of the left.

STEPS AND MARCHING

All steps and marchings executed from a halt, except right step, begin with the left foot.

The length of the full step in quick time is **30 inches**, measured from heel to heel, and the cadence is at the rate of **128 steps** per minute.

The length of the full step in double time is **36 inches**; the cadence is at the rate of **180 steps** per minute.

The instructor, when necessary, indicates the cadence of the step by calling **one, two, three, four**, or **left, right**, the instant the left and right foot, respectively, should be planted.

The command of execution for all movements to be executed while marching is given as either foot strikes the ground, except as otherwise specifically prescribed in these regulations; the movement commences when the following foot is planted.

All steps and marchings and movements involving march are executed in quick time unless the squad be marching in double time or double time be added to the command; in the latter case double time is added to the preparatory command. Example: **1. Squad right, Double time, 2. MARCH** (School of the Squad).

QUICK TIME

Being at a halt to march forward in quick time:

1. Forward, 2. **MARCH.**

At the command **forward** shift the weight of the body to the right leg, left knee straight.

At the command **march** move the left foot smartly straight forward 30 inches from the right, sole near the ground, and plant it without shock; next, in like manner, advance the right foot and plant it as above; continue the march. The arms swing naturally in a fore-and-aft direction and not across the body.

Being at a halt, or in march or in quick time, to march in double time: 1. Double time, 2. **MARCH.**

If at a halt, at the first command, shift the weight of the body to the right leg at the command **MARCH**; raise the forearms, fingers closed, thumbs up, knuckles outward, to a horizontal position along the waist line; take up an easy run with the step and cadence of double time, allowing a natural swinging motion to the arms. (See fig. 5a.)

If marching in quick time, at the command **MARCH**, given as either foot strikes the ground, take one step in quick time and then step off in double time.

To resume the quick time: 1. Quick time, 2. **MARCH.**

At the command **MARCH** given as either foot strikes the ground, advance and plant the other foot in double time; resume the quick time, dropping the hands by the sides.

TO MARK TIME

Being in march: 1. Mark time, 2. **MARCH.**

At the command **MARCH**, given as either foot strikes the ground advance and plant the other foot; bring up the foot in rear and continue the cadence by

alternately raising each foot about 2 inches and planting it on line with the other.

Being at halt, at the command **MARCH** raise and plant first the left foot, then the right as described above.

THE HALF STEP

1. Half step, 2. **MARCH**.

Take steps of 15 inches in quick time, 18 inches in double time.

Forward, Half step, Halt, and Mark time may be executed one from the other in quick or double time.

To resume the full step from half step or mark time: 1. Forward, 2. **MARCH**.

SIDE STEP

Being at a halt or mark time: 1. Right (left) step, 2. **MARCH**.

Carry and plant the right (or left) foot 10 inches to the right (or left); bring the left (or right) foot beside it and continue the movement in the cadence of quick time.

The side step is used for short distances only and is not executed in double time.

If at order arms, the side step is executed at trail without command.

BACK STEP

Being at halt or mark time: 1. Backward, 2. **MARCH**.

Take steps of 15 inches straight to the rear.

The back step is used for short distances only and is not executed in double time.

If at order arms, the back step is executed at trail without command.

TO HALT

To arrest the march in quick or double time: 1. Squad, 2. **HALT**.

At the command **HALT**, given as either foot strikes the ground, plant the other as in marching; raise and plant the first foot by the side of the other. If in double time plant other foot in double time and then halt in two counts.

TO MARCH BY THE FLANK

Being in march: 1. By the right (left) flank, 2. **MARCH**.

At the command **MARCH**, given as the right foot strikes the ground, advance and plant the left foot; then face to the right in marching and step off in the new direction with the right foot.

TO MARCH TO THE REAR

Being in march: 1. To the rear, 2. **MARCH**.

At the command **MARCH**, given as the right foot strikes the ground, advance and plant the left foot; turn to the right about on the balls of both feet and immediately step off with the left foot.

If marching in double time, turn to the right about, taking four steps in place, keeping the cadence, and then step off with the left foot.

CHANGE STEP

Being in march: 1. Change step, 2. **MARCH**.

At the command **MARCH**, given as the right foot strikes the ground, advance and plant the left foot; plant the toe of the right foot near the heel of the left and step off with the left foot.

The change on the right foot is similarly executed, the command **MARCH** being given as the left foot strikes the ground.

CHAPTER 7

MANUAL OF ARMS

In describing the manual of arms the terms "At the balance" in this text refers to the actual center of gravity of the model 1903 rifle and the center of the groove on the hand guard of the model 1917 rifle.

The following rules govern the carrying of the piece.

First. The piece is not carried with cartridges in either the chamber or the magazine except when specifically ordered. When so loaded or supposed to be loaded it is habitually carried locked—that is, with the safety lock turned to safe. At all other times it is carried unlocked with the trigger pulled.

Second. Whenever troops are formed under arms, pieces are immediately inspected at the commands: 1. Inspection; 2. **ARMS**; 3. Order (Right shoulder, port); 4. **ARMS**.

A similar inspection is made immediately before dismissal.

If cartridges are found in chamber or magazine they are removed and placed in the belt.

Third. The cut-off is kept turned "off" except when cartridges are actually used.

Fourth. The bayonet is not fixed except for bayonet training, on guard, at ceremonies, or for combat.

Fifth. Fall in is executed with the piece at order arms. Fall out, rest and at ease are executed as without arms. On resuming attention, the position of order arms is taken. (See figs. 6 a-b for positions of stand at ease.)

Sixth. If at the order, unless otherwise prescribed, the piece is brought to the right shoulder at the command **MARCH**, the three motions corresponding with the first three steps. Movements may be executed at the trail by prefacing the preparatory command with the word



FIG. 6a.—Stand at ease. Correct position. FIG. 6b.—Stand at ease. Correct position.

at trail, as 1. At trail, forward; 2. **MARCH**. The trail is taken at the command **MARCH**.

When facings, alignments, open and close ranks, taking interval or distance, and assemblings are executed from the order, raise the piece to the trail while in motion and resume the order on halting.

Seventh. The piece is brought to the **order** on halting. The execution of the order begins when the halt is completed.

Eighth. A disengaged hand in double time is held as when without arms.

The following rules govern the execution of the manual of arms:

First. In all positions of the left hand at the balance (center of gravity, bayonet unfixed) when the thumb clasps the piece, the sling is inclined in the grasp of the hand.

Second. In all positions of the piece "diagonally across the body," left arm and hand are the same as in **port arms**.

Third. In resuming the order from any position in the manual, the next to the last motion stops with the butt of the piece about 3 inches from the ground, barrel to the rear, the left hand above and near the right, to steady the piece, fingers extended and joined, palm of hand to the rear, straight and inclining downward, all fingers of the right hand grasping the piece. To complete the order, lower the piece gently to the ground with the right hand, drop the left quickly to the side, and take the position of order arms. (See figs. 7 a-d for coming to order.)

Allowing the piece to drop through the right hand to the ground or other similar abuse to the rifle to produce effect in executing the manual is prohibited.

Fourth. The cadence of the motion is that of quick time.

Fifth. The manual is taught at a halt, and the movements for the purpose of instruction are divided into motions and executed in detail; in this case the command of execution starts the first motion, and the commands two, three, four that of the other motions.

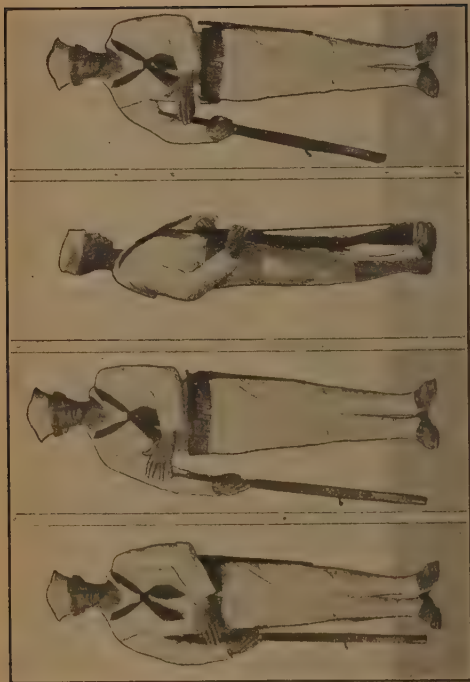


FIG. 7a.—Coming to order. Correct position
 FIG. 7b.—Coming to order. Common errors
 FIG. 7c.—Coming to order. Correct position, side view
 FIG. 7d.—Coming to order. Common errors

To execute the movements in detail, the instructor first cautions **By the numbers**; all movements divided into motions are then executed as above explained until he cautions **Without the numbers**, or commands movement other than those in the manual of arms.



FIG. 8a. — Order arms. Correct position, side view



FIG. 8b. — Order arms. Correct position, front view

Sixth. Whenever circumstances require, the regular positions of the manual of arms and the firing may be ordered without regard to the previous position of the piece.

Under exceptional conditions of weather or fatigue the rifle may be carried in any manner directed.

Position of order arms standing: The butt rests evenly on the ground, barrel to the rear, toe of butt on a line with and touching the toe of the right shoe, arms and hands hanging naturally, right hand holding the piece between the thumb and fingers. (See figs. 8 a-b for order arms.)

Being at order arms: **1. Present, 2. ARMS.**

With the right hand carry the piece in front of the center of the body, barrel to the rear and vertical; grasp it at the left hand at the balance, forearm horizontal and resting against the body. (TWO) Grasp the small of the stock with the right hand. (See figs. 9 a-d for present arms.)

Being at order arms: **1. Port, 2. ARMS.**

With the right hand raise and throw the piece diagonally across the body; grasp it smartly with both hands, the right palm down, at the small of the stock, the left palm up at the balance; barrel up sloping to the left and crossing opposite the junction of the neck with the left shoulder; right forearm horizontal; left forearm resting against the body; the piece in a vertical plane paralld to the front. (See figs. 10 a-e for port arms.)

Being at present arms: **1. Port, 2. ARMS.**

Carry the piece diagonally across the body and take the position of port arms.

Being at port arms: **1. Present, 2. ARMS.**

Carry the piece to a vertical position in front of the center of the body and take the position of present arms.

Being at present or port arms: **1. Order, 2. ARMS.**

Drop the piece to the next to last position of order arms, at the same time regrasp it smartly with the right



FIG. 9a. — Present arms. Position at arms. Correct position

FIG. 9b. — Present arms; at two. Correct position

FIG. 9c. — Present arms. Common errors

FIG. 9d. — Present arms. Common errors

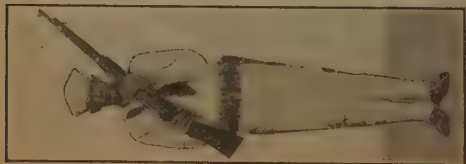


Fig. 10a. — Port arms. Correct position



Fig. 10b. — Port arms. Common errors. Front view

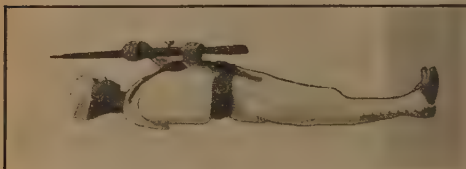


Fig. 10c. — Port arms. Correct position. Side view



Fig. 10d. — Port arms. Common errors. Side view

and just above the lower band and place the left hand above and near the right. (TWO) Complete the order. Being at order arms: 1. Right shoulder, 2. ARMS.



FIG. 10e.—Port arms.
Common errors.
Side view



FIG. 11a. Right shoulder arms. Position at arms. Correct position

With the right hand raise and throw the piece diagonally across the body; carry the right hand to the butt, embracing it, the heel between the first two fingers. (TWO) Without changing the grasp of the right hand, place the piece on the right shoulder, barrel up and



FIG. 11b.—Right shoulder arms. Position at arms, side view. Correct position

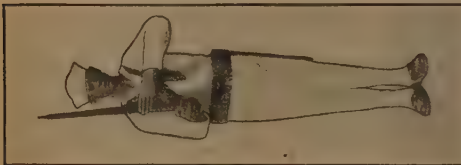


FIG. 11c.—Right shoulder arms. Position two. Correct



FIG. 11d.—Right shoulder arms. Position two. Common errors

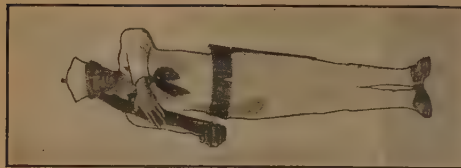


FIG. 11e.—Right shoulder arms. Position two. Common errors

inclined at an angle of about 45° from the horizontal, trigger and guard in the hollow of the shoulder, right elbow near the side, the piece in a vertical plane perpendicular to the front; carry the left hand, thumb and fingers extended and joined, to the small of the stock, tip of the forefinger touching the cocking piece, wrist straight and elbow down. **(THREE)** Drop the left hand by the side. (See figs. 11 a-i for Right shoulder arms.)

Being at right shoulder arms: **1. Order, 2. ARMS.**

Press the butt down quickly and throw the piece diagonally across the body, the right hand retaining the grasp of the butt. **(TWO)**, **(THREE)** Execute order arms as described from port arms.

Being at port arms: **1. Right shoulder, 2. ARMS.**

Change the right hand to the butt. **(TWO)** **(THREE)** As in right shoulder arms from order arms.

Being at right shoulder arms: **1. Port, 2. ARMS.**

Press the butt down quickly and throw the piece diagonally across the body, at the same time turning it to the left so as to bring the barrel up, the right hand retaining its grasp of the butt. **(TWO)** Change the right hand to the small of the stock.

Being at right shoulder arms: **1. Present, 2. ARMS.**

Execute port arms. **(THREE)** Execute present arms.

Being at present arms: **1. Right shoulder, 2. ARMS.**

Execute port arms: **(TWO)**, **(THREE)**, **(FOUR)** Execute right shoulder arms as from port arms.

Being at port arms: **1. Left shoulder, 2. ARMS.**

Carry the piece with the right hand and place it on the left shoulder, barrel up, trigger guard in the hollow of the shoulder; at the same time grasp the butt with the left hand, heel between first and second finger, thumb and fingers of right hand closed on stock.



FIG. 11l.—Right shoulder arms. Position three. Correct

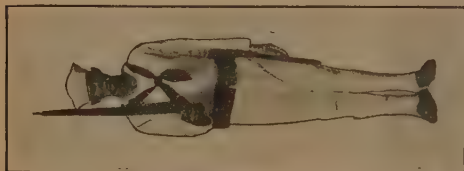


FIG. 11h.—Right shoulder arms. Position three. Correct

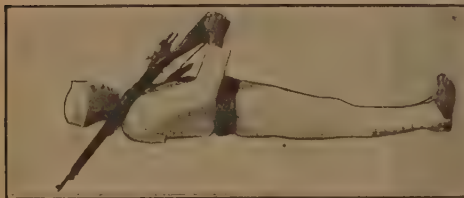


FIG. 11g.—Right shoulder arms. Position two. Common errors



FIG. 11f.—Right shoulder arms. Position two. Correct

(TWO) Drop the right by the side. (See figs. 12 a-f for left shoulder.)

Being at left shoulder arms: 1. **Port**, 2. **ARMS**.

Grasp the piece with the right hand at the small of the stock.

(TWO) Carry the piece to the right with the right hand, regrab it with the left, and take the position of port arms.

Left shoulder arms may be ordered directly from the order, right shoulder, or present, or reverse. At the command **Arms** execute port arms and continue in obedience to the position ordered.

Being at order arms: 1. **Parade**, 2. **REST**.

Carry the right foot 6 inches straight to the rear, left knee slightly bent; carry the muzzle in front of the center of the body, barrel to the left, turning the rifle on the heel of the butt, grasp the piece with the left hand just below the stacking swivel, and with the right elbow and against the left. (See figs. 13 a-b for parade rest.)

Being at parade rest: 1. **Squad**, 2. **ATTENTION**.

Resume the order, the left hand quitting the piece opposite the right hip.

Being at order arms: 1. **Trail**, 2. **ARMS**.

Raise the piece, right arm slightly bent, and incline the muzzle forward so that the barrel makes an angle of about 30° with the vertical.

When it can be done without danger or inconvenience to others the piece may be grasped at the balance and the muzzle lowered until the piece is horizontal. A similar position in the left hand may be used. (See fig. 14 for trail arms.)

Being at trail arms: 1. **Order**, 2. **ARMS**.

Lower the piece with the right hand and resume the order.

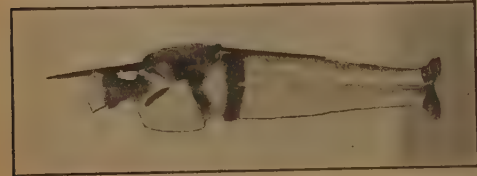


FIG. 12a.—Left shoulder arms. Position at arms. Correct position.

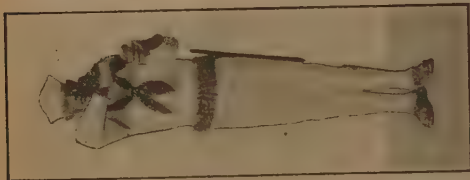


FIG. 12b.—Left shoulder arms. Position at arms. Common errors



FIG. 12c.—Left shoulder arms. Position at arms. Common errors



FIG. 12d.—Left shoulder arms. Position two. Correct position

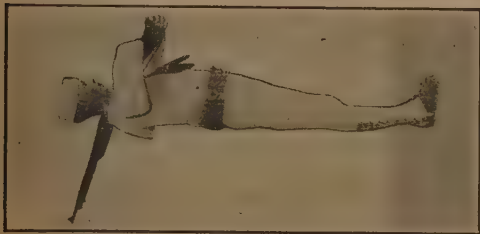


Fig. 12 f. — Left shoulder arms. Position two. Common errors



Fig. 12 e. — Left shoulder arms. Position two. Correct position



Fig. 13 a. — Parade rest. Correct position

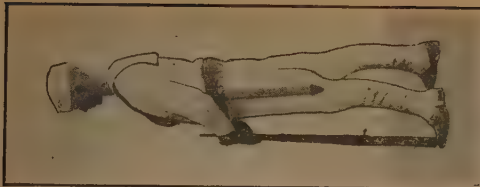


Fig. 13 b. — Parade rest. Correct position

RIFLE SALUTE

Being at right shoulder arms: **1. Rifle, 2. SALUTE.**

Carry the left hand smartly to the stock, forearm horizontal, palm of hand down, thumb and fingers extended and joined, forefingers touching end of cocking piece; look toward the person saluted. (**TWO**) Drop the left hand by the side; turn the head and eyes to the front. (See figs. 15a-e for rifle salute.)

Being at order or trail arms: **1. Rifle, 2. SALUTE.**

Carry the left hand smartly to the right side, palm of the hand down, thumb and fingers extended and joined, forefingers against piece near the muzzle; look toward the person saluted. (**TWO**) Drop the left hand by the side; turn the head and eyes to the front. (See figs. 16 a-d for rifle salute, at order.)

THE BAYONET

Being at order arms: **1. Fix, 2. BAYONETS.**

If the bayonet scabbard is carried on the belt: Execute Parade rest; grasp the bayonet with the right hand, back of hand toward the body; draw the bayonet from the scabbard and fix it on the barrel, glancing at the muzzle; resume the order.

If the bayonet is carried in the haversack: Draw the bayonet with the left hand and fix it in the most convenient manner.

Being at order arms: **1. Unfix, 2. BAYONETS.**

If the bayonet scabbard is carried on the belt: Execute Parade rest; grasp the handle of the bayonet firmly with the right hand, pressing the spring with the forefinger of the right hand; raise the bayonet until the handle is about 12 inches above the muzzle of the piece; drop the point to the left, back of hand toward

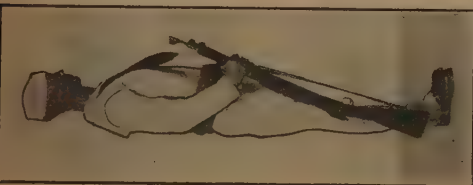


FIG. 14.—Position trail arms



FIG. 15a.—Rifle salute. Correct position

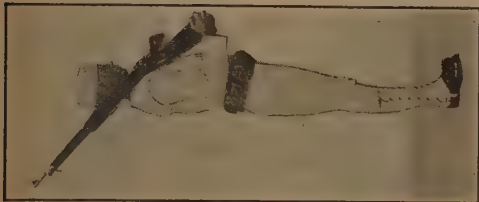


FIG. 15b.—Rifle salute. Correct position. Side view



FIG. 15c.—Rifle salute. Saluting person to the right



FIG. 15d.—Rifle salute.
Common errors



FIG. 15e.—Rifle salute.
Common errors



FIG. 16a.—Rifle salute.
Correct position

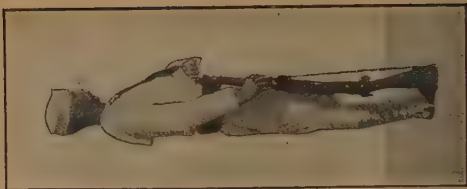


FIG. 16b.—Rifle salute.
Correct position

the body, and, glancing at the scabbard, return the bayonet, the blade passing between the left arm and the body; grasp the piece with the right hand and resume the order.



FIG. 16c.—Rifle salute. Common errors



FIG. 16d.—Rifle salute. Common errors

If the bayonet scabbard is carried on the haversack: Take the bayonet from the rifle with the left hand and return it to the scabbard in the most convenient manner.

If marching or lying down, the bayonet is fixed and unfixed in the most expeditious and convenient manner and the piece returned to the original position.



FIG. 17.—Fix bayonet



FIG. 18a.—Charge bayonet. Correct position

Fix and unfix bayonets are executed with promptness and regularity but not in cadence.

CHARGE BAYONET

Whether executed at halt or in motion, the bayonet is held toward the opponent as in position of guard in bayonet training.

THE INSPECTION

Being at order arms: 1. Inspection, 2. ARMS.

At the second command take the position of port arms. (TWO) Seize the bolt handle with the thumb



FIG. 18b.—Charge bayonet. Correct position



FIG. 19a.—Inspection arms. Position at arms

and forefinger of the right hand, turn the handle up, draw the bolt back, and glance at the chamber. Having found the chamber empty, or having emptied it, raise the head and eyes to the front.

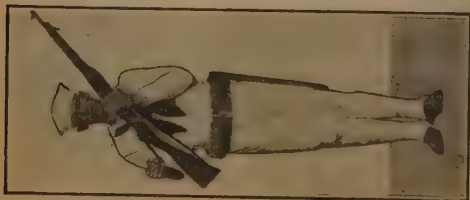


FIG. 19b. — Inspection arms. Position two

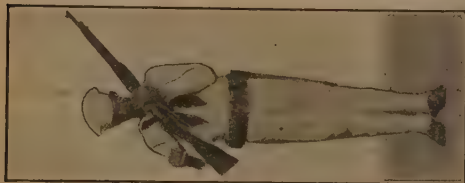


FIG. 19c. — Inspection arms. Position two. Look down

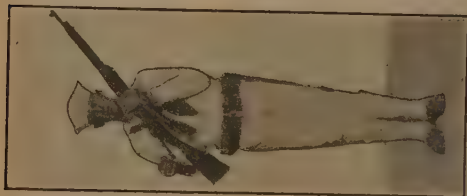


FIG. 19d. — Inspection arms. Position two. Look up



FIG. 19e. — Inspection arms. Position port

Being at inspection arms: 1. Order, (Right shoulder, port), 2. **ARMS**.

At the preparatory command push the bolt forward, turn the handle down, pull the trigger, and resume port arms. At the command, Arms, complete the movement ordered.

TO DISMISS THE SQUAD .

Being at halt: 1. Inspection, 2. **ARMS**, 3. Port, 4. **ARMS**, 5. **DISMISSED**.

CHAPTER 8

SCHOOL OF THE SQUAD

Men are grouped into squads for purpose of instruction, discipline, control, and order.

The squad proper consists of a petty officer and seven men.

The movements in the School of Squad are designed to make the squad a fixed unit and to facilitate the control of the movement of the company. If the number of men grouped is more than 5 and less than 12, they are formed as a squad of 4 files, the excess above being posted as file closers. If the number grouped is greater than 11, two or more squads are formed and the group is termed a platoon.

For the instruction of recruits, these rules may be modified.

A petty officer is the squad leader, and when absent is replaced by the second in command. The senior in length of service acts as leader if the second in command is also absent.

The petty officer, when in ranks, is posted as the left man in the front rank of the squad.

When he leaves the ranks to lead his squad, his rear rank man steps up into his file in the front rank and No. 3, rear rank moves over and covers No. 4 front rank. When the leader returns, the original formation resumed.

In battle, officers and petty officers endeavor to preserve the integrity of squads; they designate new leaders to replace those disabled, organize new squads when necessary, and see that every man is placed in a squad.

Men are taught the necessity of remaining with the squad to which they belong, and in case it is broken up or they become separated therefrom to attach themselves to the nearest squad and platoon leaders, whether these be of their own or of another organization.

The squad executes the halt, rests, facings, steps, and marchings and the manual of arms as explained in the School of the Recruit.

ORGANIZATION OF THE SQUAD

The rifle squad consists of one petty officer, six riflemen, and one autorifleman. One rifleman is equipped with a grenade discharger. One rifleman carries extra ammunition for the automatic rifle and serves as replacement for the autorifleman. All riflemen carry a certain supply of extra ammunition for the automatic rifle and, when necessary, rifle and hand grenades.

The general training of the members of the squad will be uniform. All men will be trained in the use of rifle and automatic rifle. Training in the use of grenades will be supplementary to training with the rifle and the automatic rifle.

To form the squad, the instructor places himself three paces in front of where the center is to be and commands: **FALL IN.**

The men assemble at attention, pieces at the order left hand on hip, and are arranged by the petty officer in double rank, as nearly as practicable in order of height from right to left. Each man drops his hands as soon as the man on his left has his interval. The rear rank forms with distance of 40 inches. The men on the left of the squad (left file) do not bring up the arms unless the squad is a part of a larger unit. The instructor then commands: **COUNT OFF.**

FRONT RANK.

①
RIFLEMAN
AND
SCOUT.

②
RIFLEMAN
WITH
GRENADE DISCH.

③
RIFLEMAN
SUB
AUTO-RIFLEMAN

④
PETTY OFFICER
AND
RIFLEMAN

40"

REAR RANK.

①
RIFLEMAN
AND
ASSIST. SCOUT

②
RIFLEMAN

③
AUTOMATIC
RIFLEMAN

④
RIFLEMAN

FIG. 20.—Squad organization

At this command all except the right file execute **eyes right**, and, beginning on the right, the men in each rank count **one, two, three, four**, and each man turns his head and eyes to the front as he counts. Pieces are then inspected.

As soon as its organization has been permanently fixed, the squad forms as follows: No. 1 front and rear rank, No. 2 rear rank, rifleman; No. 4 rear rank, rifleman and second in command; No. 2 front rank, rifleman with grenade discharger; No. 3 rear rank, autorifleman; No. 3 front rank, substitute autorifleman and carrier; No. 4 front rank, petty officer. (See fig. 20 for squad organization.)

ALIGNMENTS

To align the squad, the base file or files having been established: **1. Right (left), 2. Dress, 3. FRONT.**

At the command **dress** all men place the left hand upon the hip (whether dressing to the right or left), each man except the base file, when on or near the new line executes **eyes right**, and takes steps of 2 or 3 inches, places himself so that his right arm rests lightly against the left arm of the man on his right and so that his eyes and shoulders are in line with those of the men on his right; the rear-rank man covers in file.

The instructor verifies the alignment of both ranks from the right flank and orders up or back such men as may be in rear or in advance of the line; only the men designated move.

At the command **FRONT**, given when the ranks are aligned, each man turns his head and eyes to the front and drops his left hand by his side.

Whenever the position of the base file or files necessitates a considerable movement of the squad, such move-



FIG. 21.—Right dress

ment will be executed by marching the entire squad to the front or oblique, to the flank or backward, as the case may be, without other command, and at the trail.

To preserve the alignment when marching: **GUIDE RIGHT (LEFT).**

The men preserve their intervals from the side of the guide, yielding to pressure from that side and resisting pressure from the opposite direction; they recover intervals, if lost, by gradually opening out or closing in; they recover alignment by slightly lengthening or shortening the step; the rear-rank men cover their file leaders at 40 inches.

In double rank the front-rank man on the right or designated flank, conducts the march; when marching face to the flank, the leading man of the front rank is the guide.

TO TAKE INTERVALS AND DISTANCES

Being in line at a halt: 1. Take interval, 2. To the right (left), 3. **MARCH**, 4. Squad, 5. **HALT**.

At the second command the rear-rank men march backward four steps and halt; at the command **MARCH** all face to the right (or left) and the leading man of each rank steps off; the other men step off in succession; each follows the preceding man at four paces; rear-rank men march abreast of their file leaders.

At the command **HALT**, given when all have their intervals, all halt and face to the front. (See fig. 22.)

Being at intervals, to assemble the squad: 1. **Assemble to the right (left)**, 2. **MARCH**.

The front-rank man on the right stands fast; the rear-rank man on the right closes to 40 inches. The other men face to the right, close by the shortest line halt, and face to the front. (See fig. 23.)

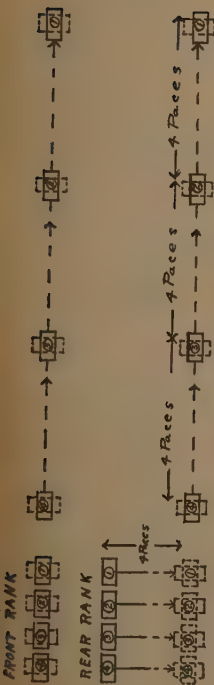


FIG. 22.—Take interval



FIG. 23.—Assemble to the right

Being in line at a halt and having counted off: **1. Take distance, 2. MARCH, 3. Squad, 4. HALT.**

At the command **MARCH** No. 1 of the front rank moves straight to the front; Nos. 2, 3, and 4 of the front rank and Nos 1, 2, 3, and 4 of the rear rank, in the order named, move straight to the front, each stepping off so as to follow the preceding man at four paces. The command **HALT** is given when all have their distances.

In case more than one squad is in line, each squad executes the movement as above. The guide of each rank or number is right.

Being at distances, to assemble the squad: **1. Assemble, 2. MARCH.**

No. 1 of the front rank stands fast; the other numbers move forward to their proper places in line.

TO TAKE AND STACK ARMS

Being in a line at a halt: **STACK, 2. ARMS.**

At the command **ARMS** each even number of the front rank grasps his piece with the left hand at the upper band and rests the butt between his feet, barrel to the front, muzzle inclined slightly to the front and toward the center of the interval on his right; the thumb and forefingers raise the stacking swivel. Each even number of the rear rank then passes his piece, barrel to the rear, to his file leader, who grasps it between the bands with his right hand and throws the butt about 2 feet in front of that of his own piece and opposite the center of the interval on his right; the right hand slips to the upper band; the thumb and forefingers raise the stacking swivel, which he engages with that on his own piece. Each odd number of the front rank raises his piece with the right hand, carries it well forward, barrel to the front,

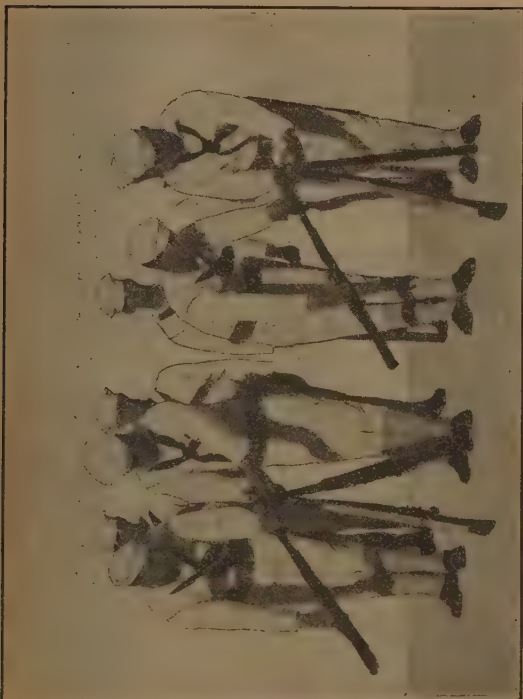


Fig. 24.—Stack arms. Forming stacks



FIG. 24a.—Stack arms. Stacks formed

the left hand guiding the stacking swivel, and engages the lower hook of the swivel of his own piece with the free hook of the piece of the even number of the rear rank; he then turns the barrel outward into the angle formed by the other two pieces and lowers the butt to the ground, to the right of and against the toe of his right shoe.

The stack made, the loose pieces are laid on it by the even numbers of the front rank.

When each man has finished handling pieces, he takes the position of attention. Being in line behind the stacks: **TAKE ARMS.**

The loose pieces are returned by the even number of the front rank. Each even number of the front rank then grasps his own piece with his left hand, the piece of his rear rank man with his right hand, both between the bands. Each odd number of the front rank grasps his piece in the same way with the right hand, disengages it by raising the butt from the ground, and then, by turning the piece to the right, detaches it from the stack. Each even number of the front rank disengages and detaches his piece by turning it to the left and then passes the piece of his rear-rank man to him. All then resume the order.

Should any squad have No. 2 and 3 blank files, No. 1 rear rank takes the place of No. 2 rear rank in making and breaking the stack. When the stacks have been made or broken, he resumes his post.

Pieces not used in making the stack are termed loose pieces.

Pieces are never stacked with the bayonet fixed.

THE OBLIQUE MARCH

For the instruction of recruits, the squad in column or correctly aligned, the instructor causes the squad to



FIG. 25.—Position for "Oblique march."

face half right or half left, points out to the men their relative positions, and explains that these are to be maintained in the oblique march. (See fig. 25.)

1. Right (left) oblique, 2. MARCH.

Each man steps off in a direction 45° to the right of his original front. He preserves his relative position, keeping his shoulders parallel to those of the guide (the man on the right front of the line or column), and so regulates his step that the ranks remain parallel to their original front.

At the command **HALT** the men halt and face to the front.

To resume the original direction: **1. Forward, 2. MARCH.**

The men half face to the left in marching and then move straight to the front.

If at half step or mark time while obliquing, the oblique march is resumed by the command: **1. Oblique, 2. MARCH.**

TO TURN ON MOVING PIVOT

Being in line: **1. Right (left) turn, 2. MARCH.**

The movement is executed by each rank successively and on the same ground.

At the command **MARCH**, the pivot man of the front rank faces to the right in marching, takes one full step and then takes eight half steps. The other men of the rank oblique to the right until opposite their places in line, then execute a second right oblique, and take the half step on arriving abreast of the pivot man. The marching flank arrives abreast of the pivot man when the latter has taken eight half steps. On the tenth count all take the full step without command.

Right (left) half turn is executed in a similar manner. The pivot man makes a half change of direction to

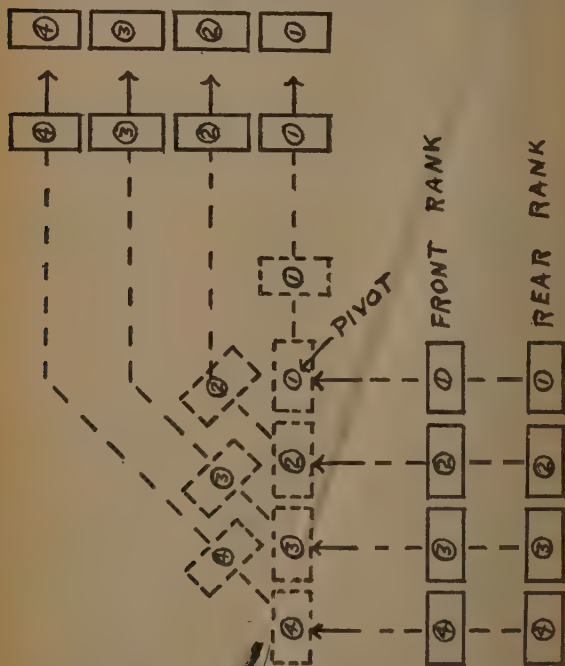


Fig. 26.—Squad right turn

the right and the other men make quarter changes in obliquing.

TO TURN ON FIXED PIVOT

Being in line, to turn and march: 1. Squad right (left), 2. **MARCH**.

At the second command, the right-flank man in the front rank faces to the right in marching and marks time for five counts; the other front-rank men oblique to the right, place themselves abreast of the pivot, and mark time. In rear rank the third man from the right marches straight to the front three steps and one half step, then faces to the right in marching and marks time. The second and first men from the right oblique to the left, then oblique to the right so as to place themselves in column in the order named behind the third man. On the fifth count all face to the right and cover their file leaders. The other number of the rear rank moves straight to the front four paces, faces right, and places himself abreast the man on his right. Men on the new line glance toward the marching flank while marking time, and as the last man arrives on the line both ranks execute forward, march, without command. (See figs. 27 and 28.)

Being in line, to turn and halt: 1. Squad right (left), 2. **MARCH**, 3. Squad, 4. **HALT**.

The third command is given immediately after the second. The turn is executed as prescribed in the preceding paragraph, except that all men on arriving on the new line mark time until the fourth command is given, when all halt. The fourth command should be given on the fourth count.

Being in line to turn about and march: 1. Squad right (left) about, 2. **MARCH**.

At the second command the front rank twice executes squad right, initiating the second squad right when the man on the marching flank has arrived abreast of the

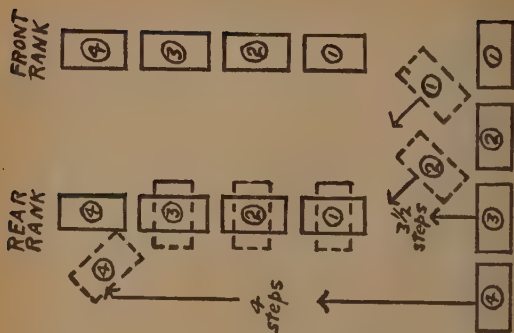


FIG. 28.—Squad right. Showing movement of rear rank

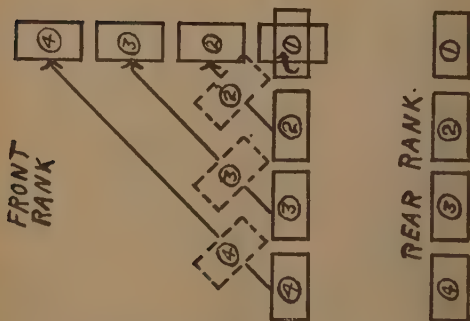


FIG. 27.—Squad right. Showing movement of front rank

rank. In the rear rank the third man from the right, followed by the second and first in column, moves straight to the front three steps and one half step, changes direction to the right, moves in the new direction three steps and one half step, when all face to the right in marching, mark time, and glance toward the marching flank. The fourth man marches straight to the front four steps, obliques to the right one step, completes the change of direction to the right, marches four steps in the new direction, and obliques to the right to his new position; as he arrives on the line, both ranks execute forward, march, without command.

Being in line, to turn about and halt: 1. Squad right (left) about, 2. **MARCH**, 3. Squad, 4. **HALT**.

The third command is given immediately after the second. The turn is executed as prescribed in the preceding paragraph, except that all men on arriving on the new line mark time until the fourth command is given, when all halt. The fourth command should be given as the last man arrives on the line.

CHAPTER 9

SCHOOL OF THE PLATOON

At the training stations the platoon is the ordinary unit used for drill purposes and is normally called a company. The regulation school of the platoon is given here and applies to the drill given to companies at training stations. The company commander at the training station corresponds to the platoon leader.

The platoon at full strength comprises a platoon headquarters and six squads.

The platoon headquarters comprises one commissioned officer (platoon leader), one platoon petty officer, two petty officers (platoon guides), two additional petty officers, and four enlisted men (runners).

The platoon in line is formed in double rank. It is divided into squads of four files each, beginning with the right flank. Platoons of more than three squads are divided into two sections. If the number of squads in the platoon is even, the section comprises an equal number of squads; if the number of squads is odd, the right section is the stronger.

The two petty officers of platoon headquarters (platoon guides) act as section leaders, the two petty officers as section guides.

In each platoon men are arranged as far as practicable according to height from right to left, the tallest on the right. Departures from this rule are authorized for the purpose of assigning men to the duties which they are best fitted to perform and in order to maintain the integrity of squads. If any

squad contains less than six men, it is either increased to that number by transfer from other squads or from the men in the file closers, or is broken up and its members assigned to other squads or posted in the line of file closers. These squad organizations are maintained by transfers if necessary until the platoon becomes so reduced in number as to necessitate a new division in squads. No squad will contain less than six men. For purposes of formation at drill, the runners may be used to fill blank files.

Sections and squads are numbered consecutively from right to left in each platoon, and these designations do not change. For convenience in giving commands and for reference, the designations right, center, and left when in line and leading, center, rear when in column are applied to the actual right, center, left, leading, or rear section or squad.

The formations of the platoon are: Line, line of sections, and column of squads, twos or files.

The principal close order formations are the line and the column of squads. The line of sections is a formation taken preparatory to deployment or for purpose of the approach march.

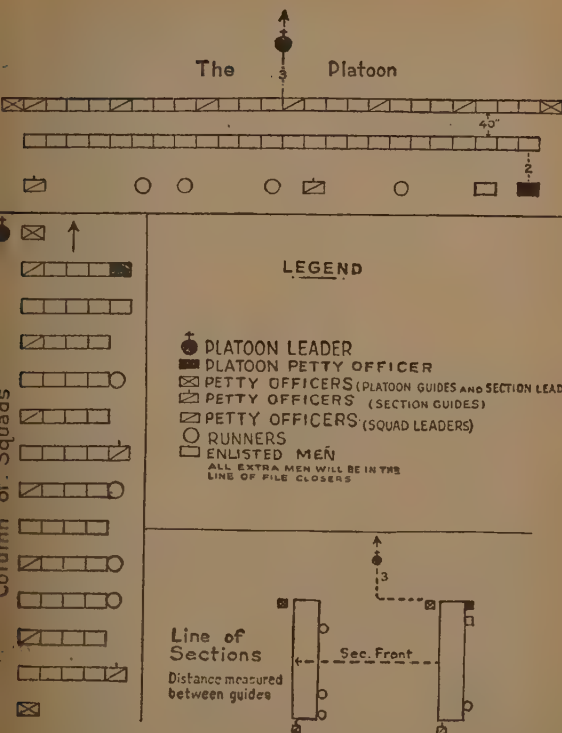
Section drills will be held for the purpose of giving section leaders an opportunity to command their sections.

When the platoon is marching on roads or trails, the file closers take position at the head or rear of the column, as directed by the platoon leader. (See fig. 29.)

CLOSE ORDER

RULES

The platoon executes the halt, rests, facings, steps and marchings, manual of arms, loadings and firings, takes in-



tervals and distances, and assemblies, increases, and diminishes intervals, resumes attention, obliques, resumes the direct march, preserves alignments, kneels, lies down, rises, stacks, and takes arms as explained in the School of the Recruit and the Squad, substituting in the commands platoon for squads.

The same rule applies to sections, detachments, details etc., substituting their designation for squad in the commands. In the same manner these execute the movements prescribed for the platoon whenever possible, substituting their designations for platoon in the commands.

A platoon of less than four squads is led by a platoon leader as a single section, but retains the designation of platoon. The petty officer assists in fire control; the other file closers place themselves in the skirmish line.

In section movements the post of the section guide is at the rear of the section.

The guides of a column of squads place themselves on the flank opposite the file closers. To change the guides and file closers to the other flank, the platoon leader commands:

1. File closers on left (right) flank, 2. **MARCH.** The file closers dart through the column; the platoon leader and guides change to the other flank.

In column of squads each rank preserves the alignment toward the side of the guide.

Men in the line of file closers do not execute the loadings or firings.

Guides and enlisted men in the line of file closers execute the manual of arms during the drill unless specially excused, when they remain at the order. During ceremonies they execute all movements. Men armed

with automatic rifle do not execute the manual of arms at either drills or ceremonies.

In taking intervals and distances, unless otherwise directed, the right and left guides at the first command place themselves in the line of file closers and with them take a distance of four paces from the rear rank. In taking intervals, at the command **march** the file closers face to the flank, and each steps off with the file nearest him. In assembling, the guides and file closers resume their position in line.

In movements executed simultaneously by sections (as sections, column right), section leaders repeat the preparatory command (column right, etc.), applicable to their respective sections. The command of execution is given by the platoon leader only.

ALIGNMENTS

The alignments are executed as prescribed in the School of the Squad, the guide being established instead of the flank file. The rear-rank man of the file keeps his head and eyes to the front and covers his file leader.

At each alignment the platoon leader places himself in prolongation of the line, two paces from and facing the flank toward which the dress is made, verifies the alignment, and commands **FRONT**. The rear-rank man and the guide on the flank away from the direction of dress do not bring up their arms. (See figs. 30 and 31.)

LINE

Being in line, to turn the platoon: 1. Platoon right (left), 2. **MARCH**, 3. Platoon, 4. **HALT**, or 3. Forward, 4. **MARCH**.

At the command **MARCH**, the right guide steps back, takes post on the flank and marks time. The right squad



FIG. 30.—Platoon right dress



FIG. 31.—Platoon in line

executes squad right and marks time. The other front-rank men oblique to the right and, when in rear of their places on the new line established by the base squad, execute a second right oblique, place themselves on this line abreast of the pivot man, and mark time. The other men of the rear rank move straight to the front 4 paces, oblique to the right, place themselves on the new line established by the rear rank of the base squad, cover their file leaders, and mark time.

The command **HALT** may be given at any time after the movement begins; only those halt who are in the new position. (See fig. 32.)

Each of the others halt upon arriving on the line, aligns himself to the right, and executes **FRONT** without command.

Being in line, to change direction: 1. Right (left) turn, 2. **MARCH**, 3. Forward, 4. **MARCH**.

Executed as described in the School of the Squad, except that the men do not glance toward the marching flank and all take the full step at the fourth command. The right guide is the pivot of the front rank. Each rear-rank man obliqued on the same ground as his file leader. (See fig. 33.)

Being in line, to form column of squads: 1. Squads right (left), 2. **MARCH**; or, 1. Squads right (left), 2. **MARCH**, 3. Platoon, 4. **HALT**.

Executed by each squad as prescribed in the School of the Squad. The file closers take posts on the pivot flank, abreast of and four inches from the nearest rank.

Being in line to form column of squads and change direction: 1. Squads right (left), column left (right), 2. **MARCH**; or, 1. Right (left) by squads, 2. **MARCH**.

In the first case the right squad initiates column left as soon as it has completed the squad right.

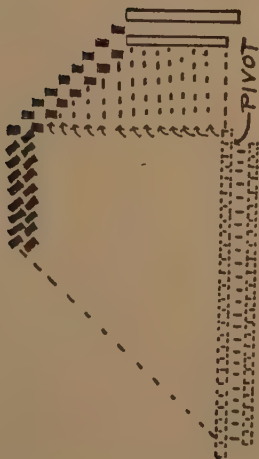
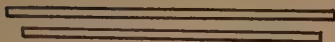


FIG. 33.—Platoon right turn

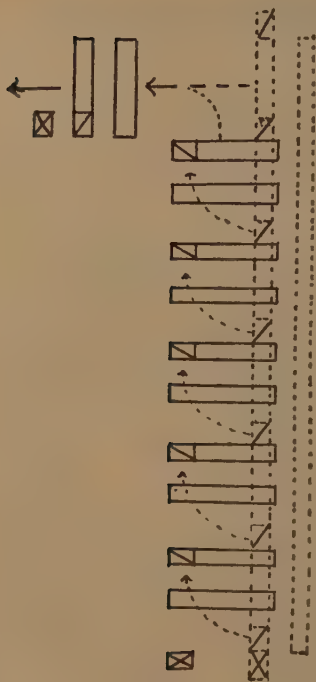


FIG. 34.—Right by squads

In the second case, at the command **MARCH**, the right squad marches forward, taking four full steps, then eight half steps, and then resumes the full step; the remainder of the platoon executes squads right, column left, and follow the right squad. The right guide, when he has posted himself in front of the right squad, takes four steps, then moving by the left oblique takes post in front of the left flank file. (See fig. 34.)

COLUMN OF SQUADS

Being in column of squads, to change direction: 1. Column right (left), 2. **MARCH**.

At the second command the front rank of the leading squad turns to the right on moving pivot as in School of the Squad; the other ranks without command, turn successively on the same ground and in a similar manner.

Being in a column of squads, to form line to the front: 1. Right (left) front into line, 2. **MARCH**, 3. Platoon, 4. **HALT**, 5. **FRONT**.

At the second command the leading squad moves straight forward; the rear squad executes right oblique.

The command **Halt** is given when the leading squad has advanced the desired distance; it halts; its leader then commands **Left dress**. Each of the rear squads, when opposite its place in line, resumes the original direction at the command of its leader. Each is halted on the line at the command of its leader (see fig. 35), who then commands **Left dress**. All dress on the first squad in line.

Being in column of squads, to form line to a flank: 1. Squads right (left), 2. **MARCH**.

Executed by each squad as described in the School of the Squad. If the platoon is formed in line toward

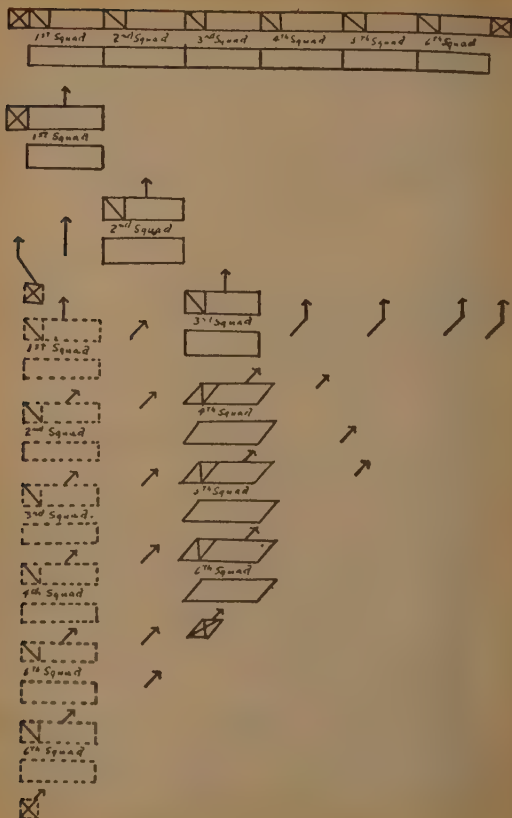


FIG. 35.—Right front into line

the side of the file closers, they dart through the column and take posts in rear of the platoon at the second command.

Being in column of squads, to form line on right or left: 1. On right (left) into line, 2. **MARCH**, 3. **Platoon**, 4. **HALT**, 5. **FRONT**.

At the first command the leader of the leading squad commands **Right turn**. The leader of the other squad commands **Forward**, if at a halt. At the second command the leading squad turns to the right on moving pivot. The command **halt** is given when the leading squad has advanced the desired distance in the new direction. It halts; its leader then commands **Right dress**.

The squads in rear continue to march straight to the front; each then, when opposite the right of its place in line, executes right turn at the command of its leader. Each is halted on the line at the command of its leader, who then commands **Right dress**. All dress on the first line. (See figs. 36 and 37.)

If executed in double time, the leading squad marches in double time until halted.

Being in column of squads, to form line of sections to the right (left): 1. **Sections, column right (left)**, 2. **MARCH**.

Executed by each section as described for the platoon.

Being in column of squads, to form line of sections to the front: 1. **Line of sections (so many paces)**, 2. **Right (left)**, 3. **MARCH**, 4. **Platoon**, 5. **HALT**.

At the third command the leading section moves straight to the front or in the direction indicated by the platoon leader; it halts at the fifth command. The rear section is conducted in column of squads on the indicated flank and halted at the prescribed interval

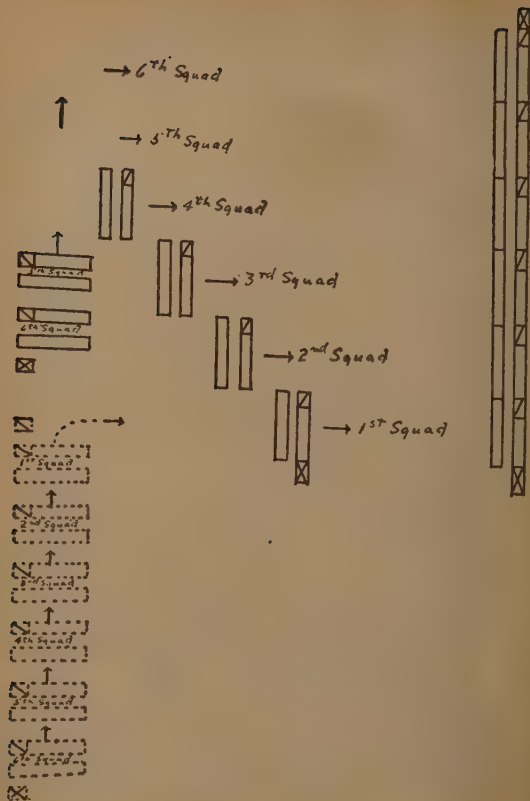


FIG. 36.—On right into line



FIG. 37.—On right into line

abreast of the leading section; if no interval be indicated in the command, it forms at section frontage from the leading section.

LINE OF SECTIONS

Being in line of sections, to change direction: 1. Platoon right (left). 2. **MARCH**. 3. Platoon, 4. **HALT**. (See fig. 38 for line of sections.)



FIG. 38.—Line of sections

The right section changes direction to the right; the other section is conducted by the shortest line to its place abreast of the right section.

The fourth command is given when the right section has advanced the desired distance in the new direction; that section halts; the other section halts upon arriving on the line.

Being in line of sections, to form column of squads to the front: 1. Column of squads, first (second) section forward, 2. **MARCH**.

The indicated section moves forward; the other section is conducted by its leader in rear of the indicated section.

Being in line of sections, to form column of squads to a flank: 1. Sections, column right, 2. **MARCH**. Executed by each section as prescribed for the platoon.

FACING OR MARCHING TO THE REAR

Being in line, line of sections, or column of squads, to face or march to the rear: 1. Squads right (left) about, 2. **MARCH**, 3. Platoon, 4. **HALT**. Executed by each squad as described in the School of the Squad. If the platoon or section be in column of squads, the file closers turn about toward the column and take their posts; if the platoon be in line, each darts through the nearest interval between squads.

To march to the rear for a few paces: 1. **About**, 2. **FACE**, 3. **Forward**, 4. **MARCH**.

If in line the guides place themselves in the rear rank, now the front rank; the file closers, on facing about, maintain their relative positions. No other movement is executed until the line is faced to the original front.

AT EASE AND ROUTE STEP

The column of squads is the habitual column of route, but route step and at ease are applicable to any marching formation.

To march in route step: 1. **Route step**, 2. **MARCH**.

The men carry their pieces at will, keeping the muzzle elevated; they are not required to preserve silence or to keep the step. The ranks cover and pre-

serve their distance. If halted from route step, the men stand at rest.

To march at ease: 1. At ease, 2. **MARCH.**

The platoon marches as in route step, except that silence is preserved; when halted, the men remain at ease.

Marching in route step or at ease: 1. Platoon, 2. **ATTENTION.**

At the command **attention** the pieces are brought to the right shoulder and the cadence step in quick time is resumed.

TO DIMINISH THE FRONT OF A COLUMN OF SQUADS

Being in column of squads: 1. Right (left) by twos 2. **MARCH.**

At the command **March**, all files except the two right files of the leading squad execute in place halt; the two left files of the leading squad oblique to the right when disengaged and follow the right files at the shortest practicable distance. (See fig. 39.) The remaining squads follow successively in like manner.

Being in column of squads or twos: 1. Right (left) by file, 2. **MARCH.**

At the command **March**, all files execute in place halt except the right file of the leading two or squad. The left file or files of the leading two or squad oblique successively to the right when disengaged, and each follow the file on the right at the shortest practicable distance. The remaining twos or squads follow successively in like manner. (See fig. 40.)

Being in column of files or twos, to form column of squads; or, being in column of files, to form column of twos: 1. Squads (twos) right (left) front into line, 2. **MARCH.** (See fig. 41.)



FIG. 39.—Right by twos. Sequence of movements indicated by Roman numerals

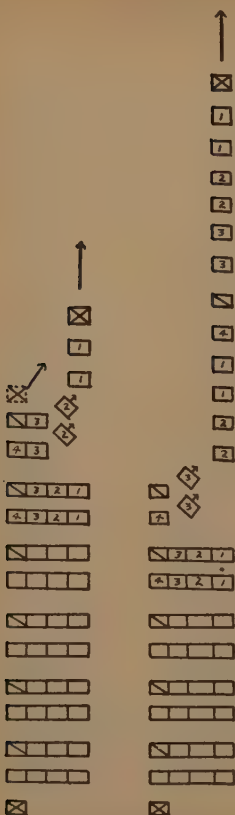
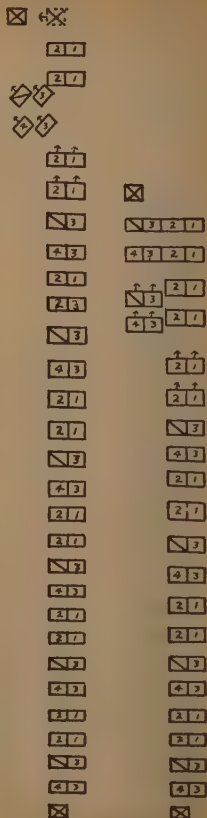


FIG. 40.—Right by file

FIG. 41.—Squads (twos)
left front into line

At the command **March**, the leading file or files halt. The remainder of the squad or two obliques to the right and halts on the line with the leading file or files. The remaining squads or twos close up and successively form in rear of the first in like manner. The movement described in this paragraph will be ordered right or left, so as to restore the files in their normal relative positions in the two or squad.

Marching by twos or files can not be executed without serious delay and waste of road space. Every reasonable precaution will be taken to obviate the necessity of these formations in route columns. They find their principal application as approach formations in the zone of hostile artillery fire.

CHAPTER 10

BOATS UNDER OARS

ORDINARY SERVICE UNDER OARS—COMMANDS

The commands in Table I shall be used by cutters with sunken rowlocks when at drill, when acting as regular running boats or making special trips with officers in port.

TABLE I

(1) Stand by the oars.	(6) In bows.
(2) Up oars.	(7) Stand by to toss; Toss, or
(1) and (2) Given before boat is reported ready.	Oars (followed by Boat the oars or Way enough, without the command Oars).
(3) Shove off.	
(4) Let fall.	
(5) Give way together.	

In all other cases the commands in Table II shall be used. Boats with swivel rowlocks will not toss oars, and boats with awnings spread can not toss oars.

TABLE II

(1) Stand by the oars.	(6) Oars (followed by Boat the oars or Way enough, without the command Oars).
(2) Shove off.	
(3) Out oars.	
(4) Give way together.	
(5) In bows; or trail bow.	

TABLE III

Out oars-----	To rig out the oars in the rowlocks ready for pulling.
Oars-----	(1) To salute. (2) To stop pulling for any purpose, keeping the oars out.
Give way together (or starboard or port).	To commence pulling.

- Trail**----- (1) To salute. (2) To pass obstructions. For the latter oars of either side may be trailed independently.
- Hold water**----- To check headway or sternway. The oars of either side may hold water independently. If boat has much headway, care is required.
- Stern all**----- To acquire sternway. Should not be given when boat has much headway. When boat has headway, should be preceded by "Hold water."
- Back starboard (or port).** To turn. Should "Hold water" before backing, if boat has much headway.
- Back starboard, give way port (or vice versa).** To turn quickly when boat has little or no headway.
- Stand by to toss: Toss**... (Used only in cutters with sunken rowlocks) (1) To salute. (2) In going alongside on occasions when it is not desirable to boat the oars. The habitual command to be used when coming alongside with double-banked boats on official or dress occasions. Given from position of "oars."
- Boat the oars**----- To get the oars into the boat. Given when lying on oars, or when oars have been tossed or trailed.
- Point the oars**----- To shove off a grounded or beached boat.
- Way enough**----- To cease pulling and boat the oars. Given only while pulling, and for proper execution, must be given just as the blades enter the water.
- Let fall**----- To go from "up oars" to "oars."

NOTE.—Thwarts and oars are numbered from forward. Double-banked thwarts are designated by No. 1, starboard, No. 1, port; No. 2, starboard, No. 2, port, etc. The thwarts next to the bow and stroke are also properly designated as second bow and second stroke.

EXPLANATIONS IN DETAIL

(Dress or special service with cutters, which requires use of commands given in Table I)

The oars will be brought to the position of **UP OARS**, before the boat is reported ready; the bowmen stand in the fore-sheets holding to the grab rope or jackstay, the inboard stroke oar in stern-sheets holds on with boat hook. The oars are brought to the position of Up oars by the commands:

Stand by the oars.—Every man except the bowmen seizes his oar by its handle and sees the blade clear of other oars. The oars should be shoved forward over the gunwale far enough to bring the handle in the proper position, but should be kept fore and aft. The blades will be kept forward of the bowmen's boat hooks. If awnings are spread the most convenient thwartmen cast off the stops. (See fig. 42.)

Up oars.—The oars, except the two bow and the inboard stroke oars, are tossed quickly to a vertical position, blades trimmed in a fore-and-aft plane and in line with that of the stroke oar, handles of oars resting on bottom boards, outboard hand grasping loom of oar at height of chin, wrist of inboard arm resting on inboard thigh and steadying oar.

The boat officer or coxswain then reports to the officer of the deck that his boat is alongside, ready for duty. When the officer of the deck has given necessary orders to the boat, the boat officer or coxswain commands:

Shove off.—This command is executed as described under Table II, paragraph (2). As soon as possible, the inboard stroke oar lays aside his boat hook and gets



FIG. 42.—Position "stand by the oars"

up his oar without further command. If time permits, the bowmen get up their oars and await the command **Let fall**. If, however, the command **Let fall** is given before their oars are up, they point their oars forward over the gunwale, kiss the blades, swing them out, and take up the stroke, or come to oars, as the case may be.

Let fall.—Given when the boat is clear of the ship's side. At this command all the oarsmen raise their oars vertically and let them fall outboard into the rowlocks smartly and together, slipping the inboard hand to the handle of the oar, and coming to the position **Oars**, with both hands on the handle. Under no circumstances should the blades be allowed to touch the water in letting fall. It may be necessary to let fall the forward oars before there is room for the after oars to clear the ship's side. This would be done by the command, 1, 2, and 3, **Let fall**. Other oars remain vertical until the command **Let fall**.

Give way together.—All the oarsmen take the full stroke, keeping accurate stroke with the starboard stroke oar. Feather blades habitually. Bowmen get their oars together and take up the stroke. (They may have gotten them out before the command **Give way together**, in which case they give way with the other members of the crew.) The crew will continue to pull a strong, steady stroke, always using their backs, and maintain silence.

In bows.—Given as landing is approached, and while the blades are in the water. Bowmen complete that stroke, toss oars simultaneously to an angle of 45°, and boat them together, seize boat hooks, stand erect in bow, facing forward, holding boat hooks vertical in front of them until needed.

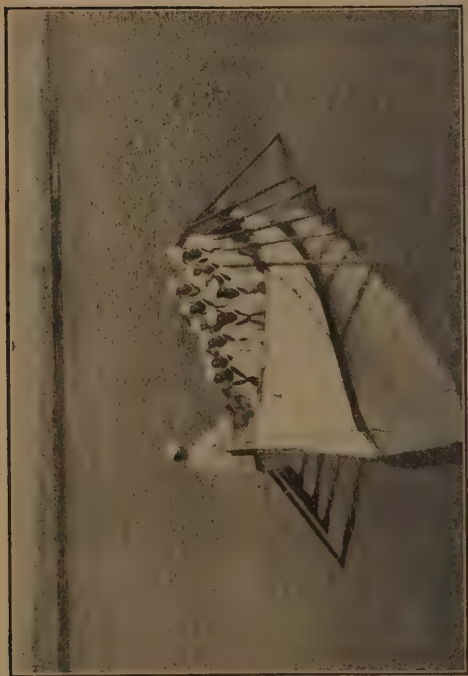


FIG. 43.—Whaleboat. Position "trail"

Stand by to toss. Toss.—The cautionary command is given as a warning to the crew. The command **Toss** is given as the blades enter the water, and when the boat has sufficient headway just to reach the gangway or landing. The oarsmen complete that stroke and then toss the oars quickly to a vertical position by pressing smartly on the handle with inboard hand, raising the oar with the outboard hand under the loom. Lower handle to bottom boards and assume position described at **Up oars**. When making a landing, the bowmen and the inboard stroke oarsmen lay their oars in the boat quickly after they have them at the vertical position, seize boat hooks, and assist to check headway and haul boat to the gangway.

The crew remain at the **Toss** until officers leave the boat. They are then in position to **Let fall**, when the boat is ordered to lie off the quarter or to haul out to the boom.

If it is desirable to lay the oars in the boat, it will be done by the command **Boat the oars**, at which each man will lay his oar quickly and quietly in the boat, blades forward.

In rough weather or at night (when it is not desired to remain alongside with the oars at **Toss** the commands **Oars** followed by **Boat the oars** or the command **Way enough** given alone, may be used as described under Table II, paragraphs (6) and (7) except in **Way enough** oars are tossed to an angle of 45° before being boated.

ORDINARY SHIP'S SERVICE, USING COMMANDS GIVEN IN TABLE II

Suppose a whaleboat (double-banked) manned at the gangway, bowmen standing in fore-sheets holding on with boat hook to grab ropes or jackstays, oars



FIG. 44.—Cutter. Position "toss"



FIG. 45.—Position, "point the oars"
(Fig. 46 omitted)

boated. The coxswain has orders to shove off and go in for a working party. The coxswain commands and the crew executes the details as follows:

(1) **Stand by the oars.**—The same as described on page 131. The blades will be kept clear of the bowmen's boat hooks.

(2) **Shove off.**—Bowman shoves boat smartly away from ship's side with boat hook, using wooden end of hook, at the same time shoving her a little ahead if possible. The coxswain sheers her off with tiller and hauls ahead on the stanchions of the gangway or on the grab rope, assisted as necessary by the inboard stroke oarsman, who takes his seat as soon as possible and prepares to get his oar out with the rest of the crew. Fenders are rigged in by men abreast them. Bowmen place boat hooks fore and aft amidships, seat themselves, and get their oars ready.

(3) **Out oars.**—Given when the boat is clear of the ship's side. Thwartmen throw blades of oars horizontally outward, allowing the leathers to fall into rowlocks without allowing the blades to touch the water, placing both hands on handle, and quickly trimming blades horizontal and directly abeam. This is the position of **OARS**. Bowmen throw their oars out at the same time as the rest of the crew, if they are ready. If not they swing their oars out together, touching their blades forward or "kissing" them, as it is called, to insure making the movements in unison, and bringing them to the position of oars, or taking up the stroke with the remainder of the crew as the case may be.

(4) **Give way together.**—All the oarsmen take the full stroke, keeping accurate stroke with the starboard stroke oar. Feathering the oars must be a fixed habit. Bowmen get their oars out together and take up the stroke. (They may get them out before the command



FIG. 47.—Cutter. Position "oars"

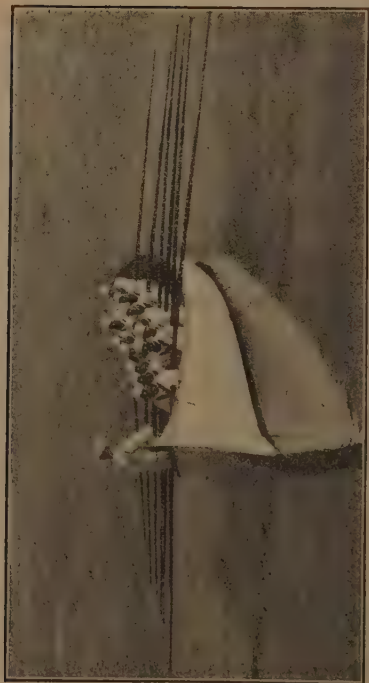


FIG. 48.—Whaleboat. Position "oars"

GIVE WAY TOGETHER, in which case they give way with the other members of the crew.) The crew continues to pull a strong, steady stroke, always using their backs, and maintaining silence.

(5) **In bows**.—Given as landing is approached and while the blades are in the water. Bowmen complete their stroke, unship oars, and boat them together; seize boat hooks, stand erect in bow, facing forward, holding boat hooks vertical in front of them until needed. See Figure 45 for position of bowmen.

(6) **Oars**.—Given when the coxswain estimates that the boat's headway will carry her to the landing and while the blades are in the water. Finish that stroke and resume the position **Oars**. When in this position, if landing or gangway is clear of other boats, command **Boat the oars**. The crew unship their oars simultaneously with as little noise as possible, rigging the blades entirely inside the gunwale. The stroke oarsman next to the landing or gangway takes up a boat hook, and the men nearest the fenders rig them over the inboard side, bowmen and stroke oarsmen check headway, keep boat clear, haul alongside, etc., as necessary. (See fig. 49.)

(7) Or, if preferable, and if the skill of the crew will enable them to perform the movement together, the command **Oars** may be omitted, and the command **Way enough** may be given instead, when the boat's headway will carry her to the landing, and while the blades are in the water at the beginning of a stroke. The oarsmen finish that stroke, and as the oars leave the water they unship them and boat them quickly and quietly, rigging the blades entirely inside the gunwale. The stroke oarsman next to the gangway or landing takes up his boat hook; men nearest the fenders rig them over the inboard side; bowmen and stroke oarsmen



FIG. 49.—Position of "boating oars." Stroke oar outboard

check headway, and keep boat clear, haul alongside, etc., as necessary.

NOTE.—With a single-banked boat, the order “trail” could be given in place of the order **Oars** or **Way enough**. The oarsmen simply let go the handles, allowing the oars to trail in a fore-and-aft direction. The oars in this case are not boated until the command **Boat the oars**, when the oars are lifted into the boat with the blades aft.

EXPLANATIONS OF SPECIAL COMMANDS GIVEN IN TABLE III

(1) **Trail**.—Given when blades are in the water. Finish that stroke, release the handle of the oar, allowing it to draw fore and aft, and trail alongside. If no trailing lines are fitted, retain the handle of the oar in the hand. With a cutter having sunken row locks, lift the handle of the oar quickly when blade is in the water at middle of stroke, throw oar out of rowlock and retain handle in hand.

(2) **Hold water**.—Given when blades are in the water. Cease pulling, drop the oars in the water and hold them perpendicular to the keel line, blades vertical. With considerable way on, especially in a laden boat, care in holding water is required to prevent carrying away the rowlock or gunwale or the oar itself. Under these conditions, drop the oar into the water with the upper edges of the blades inclined forward and gradually bring the blades vertical as way is lost.

(3) **Stern all**.—Given from position of **Oars** or **Hold water**. The oars are backed, keeping stroke and feathering as when pulling ahead.

(4) **Back starboard (or port)**.—Designated oars are backed as at **Stern all**. Generally when boats have way on, oars should not be backed until the headway is checked by holding water or laying on oars.



Fig. 50.—Position "out oars." Bowmen ready to "out oars."

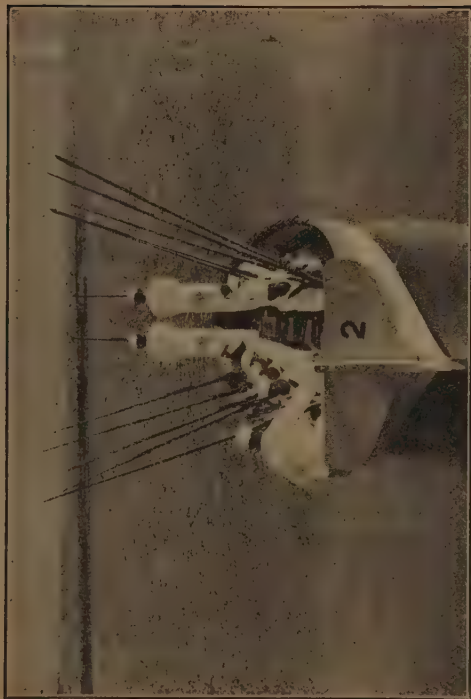


FIG. 51.—Position "way enough," oars at angle of 45°

(5) **Back starboard, give way port (or vice versa).**—Given from the position of **Oars** or **Hold water**. Proceed as described under Table II, paragraph (4) and the paragraph above.

(6) **Boat the oars.**—Given from the position **Toss Trail, or Oars**.

(7) **Point the oars.**—To shove off a boat that has grounded, stand facing aft, point the blades of the oars forward and downward to the beach at an angle of about 30° , ready to shove off at the command. If waves lift the stern of the boat, the united effort to shove off should be made just as her stern lifts..

When for any reason it may be desirable, the preparatory command **Stand by to** ——— may precede the commands **Toss, Trail, Hold water, Stern all**, or in fact any command of execution given in a boat. In order to secure precision and uniformity of movement, and in order to avoid taking the crew by surprise, cautionary orders should usually precede commands of execution, the crew thus being always prepared promptly to execute the commands when given; they should only be used when necessary, since a multiplicity of cautionary or preparatory orders detracts from the sharp, smart work that boats and their crews should exhibit.

NOTE.—The preparatory command for **Oars** is **Stand by to lay on the oars**.

CHAPTER 11

TO PULL AN OAR; NOMENCLATURE

Every sailor should know how to pull an oar properly. For purposes of explanation, the movements of a complete stroke will be divided into five positions. A study and practice of these positions will enable everyone to learn our Navy's standard stroke in a short time.

Position No. 1 (fig. 52).—This is the position of Oars. The man sits erect, eyes directly astern, oar horizontal and blade flat. Note the position of the hands on the handle of the oar. The wrists are down in order to get the blade flat.

Position No. 2 (fig. 53).—This is the position at Stand by to give way or the beginning of the stroke. The man leans well forward, arms out straight, wrists straight, eyes directly astern, the blade of the oar vertical and just clear of the water. Note that the hands are in the natural position for a heavy pull.

Position No. 3 (fig. 54).—This is the middle of the stroke. The blade entered the water from position No. 2, and the pull up to this time has been made by leaning back. The arms are still straight, eyes astern.

Position No. 4 (fig. 55).—This is the end of the stroke. This is made by giving a final pull with the arms. The blade is pulled out of the water at the finish of the pull.

Position No. 5 (fig. 56).—This is the Recovery. As the blade comes out of the water the wrists are bent down, causing the blade to lay flat with the water. This is



FIG. 52.—Position No. 1. "Oars"



FIG. 53.—Position "Stand by to give way"



FIG. 54.—Middle of stroke



FIG. 55.—End of stroke



FIG. 56.—Recovery. Blades feathered

known as **feathering the oar** and is always done in order to lessen the wind resistance or the resistance due to spray. The position of the beginning of the stroke is now taken by the man leaning forward and straightening his arms, the oar being carried in a horizontal position.

NOMENCLATURE

The following are the authorized names of the various parts of a naval boat:

Backboard.—The thwartship board immediately forward of the coxswain's box placed across the stern sheets of the boat to support the backs of the occupants.

Bilge.—The flat part of the boat's bottom, on each side of the keel, on which the boat would rest if aground. The bilge extends out to where the frames turn upward, which part is known as the "turn of the bilge."

Blade.—The broad flattened part of an oar.

Boom.—The long pole or spar used to extend the foot of a fore-and-aft sail; for example, main boom, jib boom.

Bottom boards.—The fore-and-aft strips secured to the frames, forming the floor of the boat.

Braces, rudder—upper and lower.—Strips of metal secured to the rudder, the forward ends of which fit over the rudder hanger on the sternposts, thus securing the rudder and forming a pivot upon which the rudder swings.

Main boom.—The boom on the mainmast which spreads the foot of the mainsail.

Oars.—Long wooden implements for propelling boats by pulling. Oars consist of blade, loom, and handle.

Painter.—A rope secured in the bow for towing or for securing the boat.

Peak.—The upper after corner of a quadrilateral fore-and-aft sail.

Pintles.—Small straight pieces of metal secured to the rudder and fitting in the gudgeons on the sternpost of very small boats, thus supporting the rudder. Analogous to the rudder braces, upper and lower of larger boats.

Plug.—The stopper which is placed in the drain hole when the boat is lowered. It should be secured in the boat with a small lanyard or chain.

Rising.—The narrow fore-and-aft strakes inside of the boat, secured to the frames, on which the thwarts rest.

Rowlocks.—Forked pieces of metal in which the leathers of oars rest while pulling.

Sunken rowlocks.—Those which are set down into the gunwale of the boat.

Swivel rowlocks.—Movable, the shank fitting in a socket in the gunwale.

Rudder.—A flat board hung abaft the sternpost by means of gudgeons and pintles. Used for steering a boat.

Sheer.—The curve of the gunwale which shows the difference of height above the water at stem and stern over that amidships.

Sheer strake.—The upper strake of the boat.

Sheets.—The lines secured to the clew of a sail or to the main boom, used to set the sail and hold it in position.

Shrouds.—Lines stretched from the masthead to a boat's rail. They support the mast on each side.

Sloop rig.—Consists of a large fore-and-aft quadrilateral sail with gaff and boom; also a jib and a jib boom.

Sprit rig.—Consists of a single mast carrying a large quadrilateral sail, the peak of which is held out by a light movable wooden boom called a sprit, which when in place extends from the peak of the sail to a stirrup on the lower part of the mast.

Stem.—The upright timber in the forward part of a boat, being a continuation of the keel.

Step of mast.—A small metal receptacle on the keel in which the heel of the mast rests.

Steering rowlock.—A peculiar form of swivel rowlock fitted near the stern of a whaleboat in which the steering oar is shipped. This is sometimes called a crutch.

Stern fast.—A stern painter for use in securing the stern of a boat.

Sternpost.—The principal vertical piece of timber at the after end of a boat, its lower end forming a continuation of the keel.

Stern sheets.—The space in the boat abaft the thwarts.

Strakes.—Continuous lines of fore-and-aft planking. Each line of planking is known as a strake.

Stretchers.—Athwartship; movable pieces against which the oarsmen brace their feet in pulling.

Strongback.—The spar between the davits against which a boat is griped in.

Tack.—The forward, lower corner of a fore-and-aft sail.

Thrum mats.—Mats made of a small piece of canvas with short strands of rope yarn sewed on it. Called "thrumming." These are placed between the rowlocks and the oars to prevent noise in pulling.

Thwarts.—The seats on which the oarsmen sit.

Throat.—The forward upper corner of the quadrilateral fore-and-aft sail in a sloop rig. Also called the nock.

Tiller.—A bar or lever fitted fore-and-aft in the rudder head by which the rudder is moved.

Topping lift.—A line used for supporting or hauling up the boom of a fore-and-aft sail.

Trailing lines.—Small lines secured to the boat and around the oars to prevent the latter from getting adrift when trailed in using swivel rowlocks.

Yard.—A spar to which the head of a lug sail is attached. The term "lug" is applied to the forward part of it when it has to be dipped (in some rigs) from one side to the other of the mast in going about.

Yoke.—Athwartship piece fitting over the rudder head and by which the rudder is moved when the tiller is not shipped.

Yoke lanyards.—Small lines attached to or rove through the ends of the yoke for use in steering when the yoke is shipped.

BOAT ETIQUETTE

Enlisted men who are passengers in the stern sheets of a boat shall always rise and salute when a commissioned officer enters or leaves the boat.

Juniors always get into the boat before and leave it after their seniors, unless the senior officer in the boat gives orders to the contrary.

As a general rule, the senior take the seats farthest aft; the juniors will leave such seats for their seniors.

The position of attention in a boat is sitting erect on thwart or in stern sheets.

At landing places officers are saluted by the crew of a pulling boat by sitting at attention and by the coxswain rising and saluting with the hand.

Enlisted men who are passengers in a running boat which contains officers shall maintain silence.

CHAPTER 12

KNOTS AND SPLICES; LEAD LINE

1. Every sailor should take pride in knowing how to make the knots ordinarily used in our modern Navy. Only the ones most commonly used will be given here. Practice making them so that you can make them perfectly and quickly. Many times speed in making these knots is very important.

(a) **Overhand knot.**—Used in making other knots; never used alone.

(b) **Square knot (or reef knot).**—Used for tying reef points and bending ropes together.

(c) **Figure-of-8 knot.**—Put on end of rope to prevent end from unreeving through a block or eyebolt.

(d) **Bowline.**—Used wherever you want a knot that will not slip.

(e) **Running bowline.**—A bowline made around the standing part.

(f) **Bowline on a bight.**—Used to sling a man over the side.

(g) **Half hitch.**—Used for making fast a line to post or spar.

(h) **Two half hitches.**—Used same as half hitch. Two half hitches are much better than one.

(i) **Clove hitch or ratline hitch.**—Ratlines are hitched to shrouds in this way.

(j) **Timber hitch.**—Used for towing spars.

(k) **Timber hitch and half hitch.**—Used same as timber hitch. The half hitch placed near end of spar assists in towing spar fore and aft.



Over-hand knot



Figure-of-eight knot



Reef or square knot



Running bowline



Bowline



Bowline on a bight



Half hitch



Two half hitches

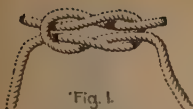


Fig. 1.
Square or Reef Knot.

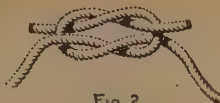


Fig. 2.
Granny Knot.



Fig. 3.
Sheet or Becket
Bend Single.

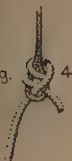


Fig. 4.
Sheet or Becket
Bend Double.

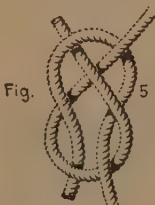


Fig. 5.
Single Carrick Bend (1.)



Fig. 6.
Single Carrick Bend (2.)

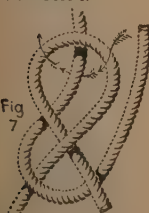


Fig. 7.
Double Carrick Bend (1.)



Fig. 8.
Double Carrick Bend (2.)

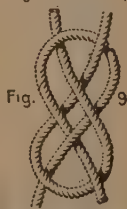


Fig. 9.
Double Carrick Bend.
(2nd Method)

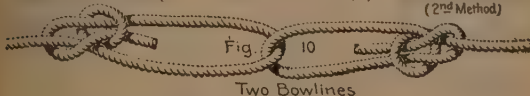


Fig. 10.
Two Bowlines

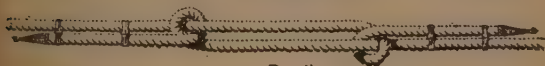


Fig. 11.
Reefing-Line Bend.

BENDING TWO ROPES TOGETHER

Reproduced from Knight's "Modern Seamanship," by permission.
Courtesy of D. Van Nostrand Co.

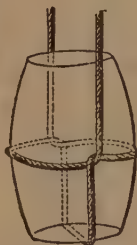
(*l*) **Round turn and half hitch.**—Used for bending a line to an anchor.



Hoghead sling



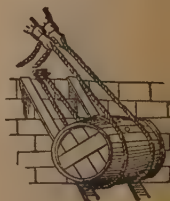
Sling a cask, head up



Sling a cask, head up



Bale sling



Parbuckle

FIG. 59

(*m*) **Blackwall hitch.**—Used for securing hook to the bight of rope quickly.

(*n*) **Cats paw.**—Used same as blackwall hitch.



Clove hitch ; or ratline
hitch



Timber hitch



Round turn and
half hitch



Timber and half hitch



Blackwall
hitch



Catspaw



Marlin hitch



Sheep shank

- (o) **Sheep shank.**—Used for shortening bight of rope.
- (p) **Marlin hitch.**—Used for lashing hammock.
- (q) **Sheet or becket bend.**—Used for bending rope to becket.
- (r) **Sheet or becket bend (double).**—Used for bending rope to becket.

2. The following knots are used for bending two ropes together:

- (a) **Square knot.**
- (b) **Two bowlines.**
- (c) **Single Carrick bend.**
- (d) **Reeving line bend** (used where line is to be rove through block.)

3. The following show how casks, bales, etc., can be hoisted aboard:

- (a) To sling a cask head up.
- (b) Bale sling—for hoisting bales or boxes.
- (c) Parbuckle—to parbuckle cask or drum.

SHORT AND LONG SPLICES

Both splices are used for bending two parts of a rope together. The long splice is used where the spliced part is not to be larger in diameter than the rest of the rope. (See figs. 61 and 62.)

LEAD LINE

Soundings, to ascertain the depth of water on entering or leaving a port or in cases where there is supposed to be less than 20 fathoms of water, are taken by the hand lead, a quartermaster, seaman, or seaman, second class, being stationed in the chains for the purpose, the lead weighing from 7 to 14 pounds and the line being from 20 to 30 fathoms in length.

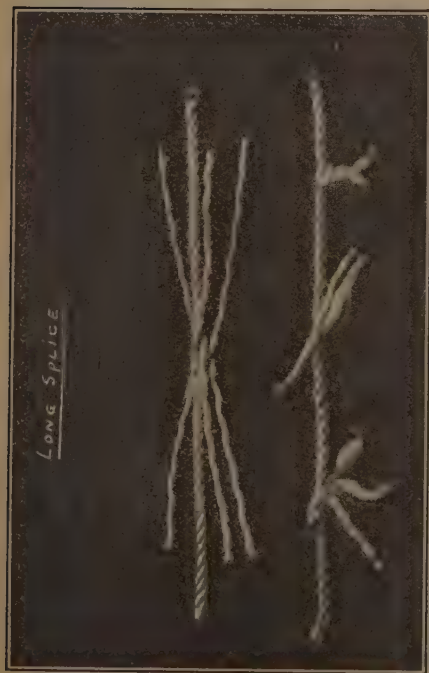


FIG. 61

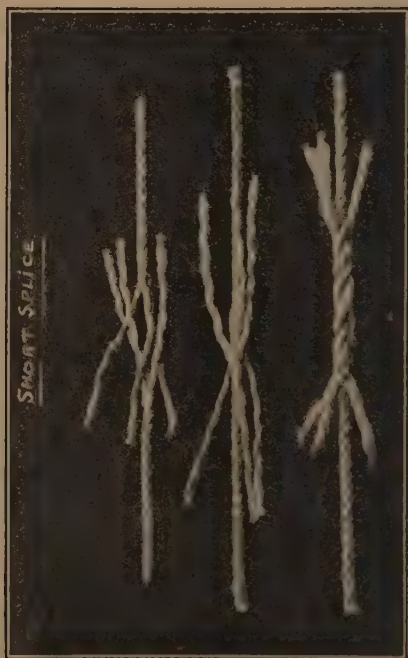


FIG. 62

The lead lines are marked as follows:

At 2 fathoms from the lead with 2 strips of leather.

At 3 fathoms from the lead with 3 strips of leather.

At 5 fathoms from the lead with a white rag.

At 7 fathoms from the lead with a red rag.

At 10 fathoms from the lead with leather having a hole in it.

At 13 fathoms from the lead with same as at 3.

At 15 fathoms from the lead with same as at 5.

At 17 fathoms from the lead with same as at 7.

At 20 fathoms from the lead with two knots.

These are known as the **marks**. The numbers omitted, as 1, 4, 6, 8, etc., are called the **deeps**, and they are spoken of together as the **marks and deeps of the lead line**.

Soundings by the hand lead are taken while the vessel has weigh on, the leadsman throwing the lead forward and getting the depth as the vessel passes, while the line is nearly perpendicular. He communicates the soundings obtained thus:

If the depth corresponds with either of the above marks, he says, "**By the mark 5**" or "**7.**" If the depth is greater, or one-half more than any of the marks, he says, "**and a quarter,**" or "**and a half 5**" or "**7.**" If the depth is a quarter less, he says, "**quarter less 5**" or "**7.**" If he judges by the distance between any two of the marks that the depth of water is 4, 6, 9, 11, 12, 14, 16, 18, or 19 fathoms, he says, "**by the deep 4, 6,**" etc.

On the hand lead there are 9 **marks** and 11 **deeps**.

On going into the chains for the purpose of sounding, the leadsman should see that the breast rope is properly secured, his line clear, and the end made fast. If at night, he should take the distance from the breast rope to the water's edge; then at each cast deduct this distance from the mark at hand and give it as the true sounding.

CHAPTER 13

THE COMPASS

A simple straight bar magnet suspended by a string and allowed to move freely will, when it settles down, point to the north magnetic pole. This is a simple magnetic compass. Of course this type could not be used aboard ship, but the principle is the same. On board ship we have a circular card which is balanced on a needle point at its center, so that it can revolve freely. Attached to this card are four magnets, two on each side of the center. The needle is mounted on a pivot in a bowl and the bowl filled with alcohol, which will not freeze. This alcohol keeps the card from wobbling or moving too quickly. On top of the card is a little air chamber to help take the weight of the card and its magnets off of the needle point.

The face of the card is marked with "points" and degrees. The main or cardinal points are north, or 0° ; east, or 90° ; south, or 180° ; and west, or 270° . Between these main or cardinal points are four intercardinal points. To box the compass is to name the points in regular succession, beginning at one point and ending with the same.

Below will be given the boxing of the compass by intercardinal points, beginning with north and going around to the right back to north with the corresponding degrees.

	Degrees
North -----	0
Northeast -----	45
East -----	90
Southeast -----	135
South -----	180
Southwest -----	225
West -----	270
Northwest -----	315
North -----	360 or 0

The lubbers' point is a vertical line drawn on the inside of the bowl of the compass to correspond to the ship's head. The point on the compass card coinciding with this lubbers' line gives the heading of the ship, or the course being steered.

All courses steered by our ships are given in degrees, as course 45° , course 196° , etc. You should learn the four cardinal points with their degrees and also the four intercardinal points with their degrees. The main thing is to know the markings in degrees. The Navy standard compass card, showing the four cardinal and four intercardinal points and degrees, is illustrated in Figure 63.

The earth is a big magnet with a north magnetic pole and a south magnetic pole. Any magnet on this earth, as the magnets in the compass, will have their north seeking pole attracted by the north pole of the earth; and if the magnet can swing around, as our compass magnets can, the north seeking pole of the magnet will point to the north magnetic pole on the earth. Now all magnets work on other magnets near them and attract or repel each other. Besides, all iron is magnetic and acts like magnets. Our poor compass, then, unless it happens to be aboard a ship that hasn't a bit of iron in her, is being pulled and pushed by many

other magnets, due to the iron of the ship. The compass, with its bowl, is placed in a binnacle, or a little compass house. In this binnacle are magnets and two



FIG. 63.—Standard Navy compass card

iron balls which are used to neutralize the magnets of the ship so that the compass will point to the earth's magnetic pole. Now the iron on the ship is riveted in

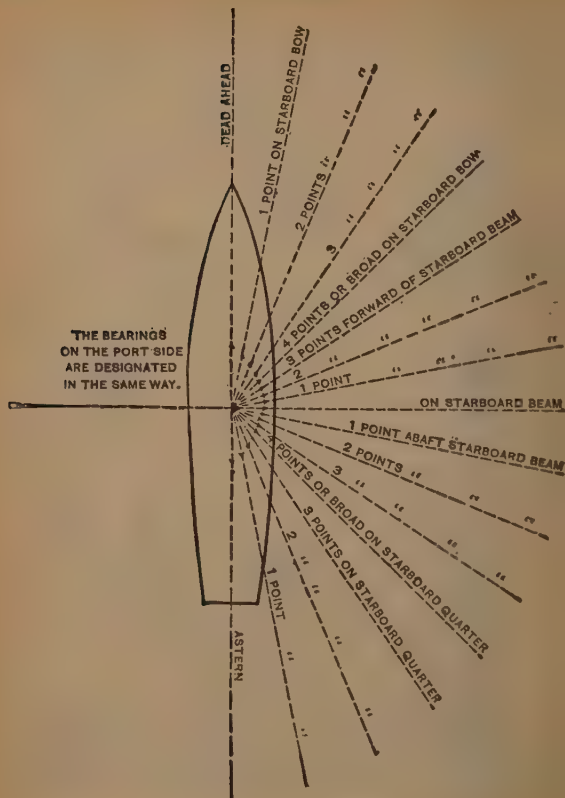


FIG. 64.—Relative bearings

place and the compass can be corrected for the magnetism in this iron. But what happens now if you come up to take the wheel with a jackknife or a bunch of iron keys in your pocket? This knife and any iron you have in your pockets will contain magnetism and will draw the compass away from the true magnetic north. Your compass will be in error and you may steer the ship onto the rocks. Therefore, never go near the compass with any iron or steel on your person.

All our big ships and submarines and many of our destroyers now have gyrocompasses as well as magnetic compasses. The gyrocompass is a heavy wheel made to revolve about 8,000 revolutions per minute by means of an electric motor. By a combination of a weight attached to this gyro and the revolution of the earth the axis of this gyro points to the true north pole. This compass, then, does not depend on magnetism at all. It is usually placed in the safest part of the ship, far below the water line. Repeater compasses, which are simple compass cards with electrical connections to the gyrocompass, are placed near the wheel and in various parts of the ship. These repeater compasses are operated by and show the same readings as the gyrocompass.

RELATIVE BEARINGS

Lookouts always report anything they sight to the officer of the deck by relative bearings from the ship. There are 32 points to the circle or 16 points from ahead to astern. Figure 64 shows the relative bearings on the starboard side. They are the same for the port side, merely changing "starboard" to "port."



CHAPTER 14

VISUAL SIGNALS

1. All men must know how to signal by means of semaphore. You will often be called upon to use the semaphore system, especially if you stay in the seaman branch. This is a rapid system of signaling and is used principally for fairly short distances, as the flags are small.

2. The alphabet is given on page 174.

3. Always spell out numbers.

4. The attention, answering, and front sign are shown in Figure 65.

5. Procedure signs ordinarily used are given below: Letters overscored are made as one word:

Error_____	<u>EEEEEEEEEEEE</u>
Interrogatory_____	<u>INT</u>
Message follows_____	<u>BT</u>
Signals follow_____	<u>IM</u>
Number of words or groups_____	<u>GR</u> ¹
End of word_____	Front
End of dispatch_____	<u>AR</u>
Repeat all before word_____	<u>IMI</u> AB word
Repeat all after_____	<u>IMI</u> AA word
Repeat word after word_____	<u>IMI</u> WA word
Received_____	<u>R</u> ²
Move to your right_____	<u>MR</u>
Move to your left_____	<u>ML</u>
Move up_____	<u>MU</u>
Move down_____	<u>MD</u>

¹ Followed by number spelled out.

² Used only when call flags are not used. When flags are used, the hauling down of the call signifies "dispatch received."

THE SEMAPHORE ALPHABET

CHAR- ACTERS	HAND FLAGS	CHAR- ACTERS	HAND FLAGS	CHAR- ACTERS	HAND FLAGS	CHAR- ACTERS	HAND FLAGS
A		I		Q		Y	
B		J		R		Z	
C		K		S		ATTENTION ANSWERING SIGN FRONT	
D		L		T			
E		M		U			
F		N		V			
G		O		W			
H		P		X			

FIG. 65

CALLS

1. To call a ship or unit, flag hoists are used. Each ship is assigned a call letter, which is made by means of these flags.

2. To call without the use of flag hoists, face the person or station called and make the **attention** sign. If this is not sufficiently definite, three or four letters abbreviating the person's or station's name will be used as a call. To answer a call, make the **answering** sign.

3. As an example for use in signal drill at a training station, John Doe wishes to send the following message to James Pederson: "Come over to smoker to-night."

4. John Doe faces James Pederson and makes **attention** sign. If James Pederson fails to get the call, John Doe will send the abbreviation **ped** until the call is answered by the **answering** sign.

5. As soon as John Doe's call is answered as above, the procedure for sending and receiving the signal is as follows:

6. Letters **MSG** in the text indicate that the dispatch is unofficial.

John Doe (sending)-----	James Pederson (receiving).
(a) Makes Front -----	Do.
(b) Makes GR5 BT MSG -----	Do.
(c) Makes Front -----	Do.
(d) Sends the 5GR message-----	Do.
(e) Makes front after each group--	Do.
(f) Makes AR at end of message--	Makes R to show that mes-
	sage is received and under-
	stood.

7. In case the message is not understood, the man receiving can ask to have any part of it repeated by using the repeat signal **IMI** followed by the letter indicated in the "Procedure" table.

8. For the flag dot-and-dash alphabet, see Plates **IV**, **V**, and **VI** in front of book. These plates also give the spoken names of the flags.

CHAPTER 15

HOW TO SWIM

(Prepared by Mr. Graham Curry, physical director, Y. M. C. A.,
San Diego, Calif.)

THE REQUIREMENTS

Fair health, normal mentality, coordination, and confidence are all that are required to learn how to swim. We will assume that the beginner already qualifies in the first two requirements, and that he will express his coordination qualifications in the rapidity with which he learns. Aside from these more or less natural requisites, and a thing which is primary to the beginner is **confidence**.

CONFIDENCE

The beginner must have confidence in the water to support him, and he must have confidence in himself to get his feet on terra firma any time he chooses. He must also have confidence in the instructor and his method. The instructor should do everything in his power to prevent the beginner from getting strangled. Be patient, reason with him, do not be too hasty. Remember this—the more you understand and sympathize with his fear of the water, the more you reason with him, the more confidence he will have in you and the more quickly he will learn. In order to make the instruction as brief and as clear as possible, let us assume that we are in the water. I am the instructor, you are the beginner.



FIG. 66.—Towing

Come on over to the side of the tank; hold your hands out in front, palms down. I am facing you and have my hands extended, palms up. Now place your hands upon mine. Do not grasp them, but just rest your weight slightly upon my hands. Presently I am going to walk backward through the water as fast as I can, drawing you forward through the water on your stomach. Do not be afraid. I promise you that I will not let you get any water on your head. Straighten and stiffen your body into a straight line; take a deep breath. Here we go—That's fine; now what held you up? "The water." That's right; the



FIG. 67.—Shoving off

water held you up. You really couldn't go down and sit on the bottom unless you let all the air out of your lungs. We will repeat this about half a dozen times after which we will let you shove off by yourself.

Now I am about 10 feet from the side of the tank and I am facing you. Place your right foot against the side of the tank, take a deep breath, and shove off toward me. Straighten your body. I will catch you by the arms and raise you up. I promise I will not let you get strangled. Are you ready? Shove off—That's fine. I will stand back a little farther this time—Great!

Keep your arms and hands straight out in front of your head, hands with palms down, and pointing

slightly upward. The thumbs are locked. Lay your face in the water.

Now you must learn how to get your feet on the bottom so you will be able to shove off, coast across the tank, and stand on your feet without any aid from me. Look! I am coasting through the water; to get my feet on the bottom I simply pull backward and downward with both arms at the same time, and at the same time I draw my legs and thighs forward and upward. Nothing to it! See how easily I came to a stand. Now you try it. I will stand by to catch you in case you should not do it in good form the first time. Great! Now let's see you do it yourself half a dozen times. Do not get excited; keep cool.

THE DOG PADDLE

This is the stroke which may be learned most quickly. This is true simply because it is most natural. The young puppy a week old swims it very proficiently the first time he is thrown into the water. Pigs, cows, horses, chickens, ducks, rats, cats, and any animal which may be thrown in the water will swim this stroke, with the exception of the snake, the frog, and the human being. The snake swims like the fish—that is, by sculling. The frog swims a breast stroke, but the human being will drown in most instances if someone does not pull him out. The cause for this is that we can reason. Our superior intelligence warns us with the startling suggestion that we are going to drown because we can not swim. No man is going to coolly feel himself drown without doing something about it, so we immediately rush into a fit of excitement, thereby stiffening our extremities. This procedure simply aids us in drowning more quickly. The animal can not

reason. When he is thrown in he does not know of the possibility of drowning. He feels uncomfortable; he does not want to get water in his mouth and nose, so he starts walking, crawling, pulling, and in a very natural way soon reaches the shore, if it is not too far distant. Some human beings have been known to swim out when thrown in, but this is a rare thing and it only serves to make the victim afraid of the water. Now I will show you the dog paddle. You will learn it and swim it all by yourself in less than 10 minutes.

Can you climb a ladder? That's all there is to it. The dog paddle is the same action exactly, except that you are lying on your stomach in the water and instead of having to look for the rungs of the ladder to pull on with your hands and push against with your feet, you simply pull the water back with your hands and push it back with your feet. Your left hand and left leg work together, while your right hand and right leg work at the same time. Keep your fingers together with the thumbs against your forefingers; slightly cup your entire hand. Now we will try the movement on land. Stand upright. Go through the motion of climbing a ladder; get the arms farther away from the body though. As you move your hand upward it must be streamlined so as not to cause head resistance. As it is brought backward it is pulled in a manner which will move the greatest amount of water. Raise the knees high and well underneath the body. Push them back strongly just as you would push on the rungs of a ladder if you were climbing. Be sure to let the left leg and left hand follow each other up and down just as the right hand and leg follow each other. Fine! Now we will get in the water.



FIG. 68.—Dog paddle

Do not be afraid. I promise you I will not let any water get in your mouth. I will now grasp you around the body just above your waistline. Now lay deep in the water. Deeper yet; tilt your head backward and barely let your mouth be above the surface. Now go through the "climb-the-ladder" movements. Do not get excited. I am holding you up. Keep cool and sink deeper in the water. You are working too fast, and you keep trying to get your head way up out of the water. You must be trying to *take off* and fly like a hydroplane; that's wrong; you must stay in the water if you intend swimming in it; you must sink deeply in it if you are to give it a chance to support your body. Try again; that's better. Now I want you to stand at the edge of the tank, place your right foot against it, take a big, deep breath, lay your face in the water, and shove off just as you did in the lesson of confidence; this time you will work the dog paddle for six strokes. Be sure to count them, and do not quit until you have taken six strokes. At the end of the six strokes I will raise you up. There, that's pretty good, but you worked too fast, too hard, and you were too stiff. Relax, loosen up, keep cool, and take it easier. This time I will not be there to raise you up. You know how to get your feet on the bottom. Fine! Now take eight strokes. Now ten. Now this time you will swim without placing your face in the water, and you may take as many strokes as you choose; but remember, do **not** try to hold your head high above the surface; that only tends to sink you. Great! Now you can swim the dog paddle or elementary crawl stroke. What you want now is **more speed**. You'll get that in the side stroke, the side stroke with one arm out of water, then more speed

with the trudgeon, and then still more speed with the trudge-crawl, and finally your maximum speed with the American crawl. We will take that up in other lessons.

THE SIDE STROKE

This is the basis for all strokes except the breast stroke. The breast stroke is no longer used as a teaching method by modern swimming instructors. If one can swim a fair side stroke he may learn the trudgeon, the trudge-crawl, the American crawl, and the back stroke, all of them in less than an hour's time. This is true because of the direct relationship between these strokes. This stroke is a little more difficult to learn than the dog paddle, but since confidence is essential to the beginner it is well that the would-be swimmer has a certain amount of faith in his dog paddle. This helps to relieve his mind of the fear of swallowing water, and therefore greatly aids in his progress.

Now get in the water. Lie on your right side, grasping the side of the tank with both hands. The right hand should be lower than the left. Be sure you are well on your right side. Now, 1. Come to a full knee bend position with both legs and thighs (maintain the position on the side). 2. Thrust the legs and thighs in a position like that of a dancer doing a full "split." 3. Close the legs fully extended in a long sweep to an erect or straight position. The legs and feet finish together, toes pointed.

When this movement is mastered at the side of the tank, shove off, lying on your side with your head under water. Take one good scissors kick. Try it again, taking two or three kicks. This is a powerful kick which propels one through the water with fair speed.

To learn the arm movements, stand upright in the water about chest deep. Stand with your feet about



FIG. 69.—Position 1. Side stroke

20 inches apart. Hold both hands in front of your chest, palms down, the right just above and over the left hand. Now streamline the right hand, reaching

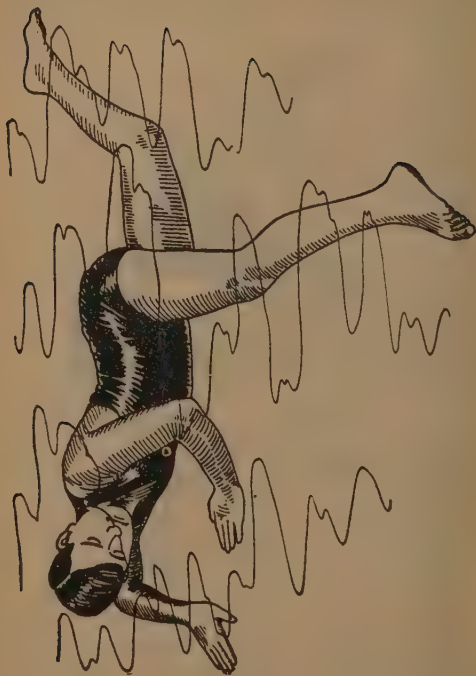


FIG. 70.—Position 2. Side stroke

toward the right as far as possible. At the same time the left hand is pulled across and away from the body toward the left. Keep the hands under water.

Now pull hard with the right hand, in toward the chest, at the same time streamlining the left and bringing it to the same position—the starting position just under the right hand.

I will now grasp you about the waist from the rear, holding you on your right side. Now go through your scissors kick, gradually working your arm movement in with it. The legs are opened as the upper arm starts down, and snapped powerfully together as it



FIG. 71.—Position 3. Side stroke

finishes. The right hand works oppositely. Lie low in the water, take your time, and make a pillow of the water on which to rest your head. The swimmer may lie on either side he chooses, although the right side is better, since it relieves the heart of an added amount of pressure.

Now shove off from the side all alone with your face in the water. Take about two strokes, then come to a stand. Increase the number of strokes as well as the effectiveness until you are able to swim the side stroke with your face partly out of water. The most common fault of the beginner here is to work too fast. Coast for a few feet after each stroke.

THE SIDE STROKE WITH ONE ARM OUT OF THE WATER

This gives more speed. As you bring your left hand forward simply raise the left arm out of the water elbow first, allowing the forearm to trail. Reach forward as far as possible. The right hand and the legs perform exactly in the same way they did in ordinary side stroke. Raising your arm out of water will cause your body to sink deeper. As your head partially submerges, blow the air out of your lungs under water, then just at the finish of the stroke take an ordinary breath. Do not take in too much air; you may become filled with it. A good way to learn to breathe is to stand in water about chest deep, lay the face in about 3 or 4 inches, exhale, raise the face up and inhale. Do this continuously for a few minutes at a time.

THE TRUDGEON

This gives still more speed. It is an easy stroke, used most often in distance races and long channel swims. Now if you can swim the side stroke with one arm out of the water, you already know how to swim the trudgeon, even before trying. Do this: Swim the side stroke with one arm out. Now as the left hand reaches forward and takes the water, simply roll over on your left side and raise the right hand out; reach forward and stroke. Now roll back on your side and take the side-stroke action.

THE AMERICAN CRAWL

This is the world's fastest speed stroke. Here we have the close relationship to the last stroke learned—the trudgeon. If you can swim a fair trudgeon stroke,

you are to be congratulated, for you already know how to swim the American crawl. A few minor changes are all that is necessary, and they are so simple that you will be able to swim a pretty fair crawl the first time you try. A change of kick is the principle necessity. Lying on the abdomen in the water, the legs are worked in an alternated "up-and-down" fashion. The movement is continuous and comparatively fast, being about 300 power beats per minute; that is, the water is forced out from between the legs at about the rate of 300 times each minute, and each beat propels the body



FIG. 72.—American crawl

forward. The knees are kept stiff, the ankles are allowed to remain limber and relaxed. The legs are moved apart for a distance of from a foot to 18 inches. The feet are barely brought to the surface. Do not get them out of water. Remember, your propellers must be submerged to be effective. Do not allow them to get too deep for the body must lie in a horizontal position if it is to make speed in the water.

The arm stroke is very much like that in the trudgeon, except there is not as much roll. Reach as far forward as possible and straight out in front of the shoulder. Do not cross the arms over. At the

finish of a stroke the arm should be raised out of the water elbow first and with the palm of the hand up. It is carried forward and sideward, relaxed, in this position, until the instant before entering the water, at which time the hand is turned, entering the water palm downward. Common faults are twisting or rolling too

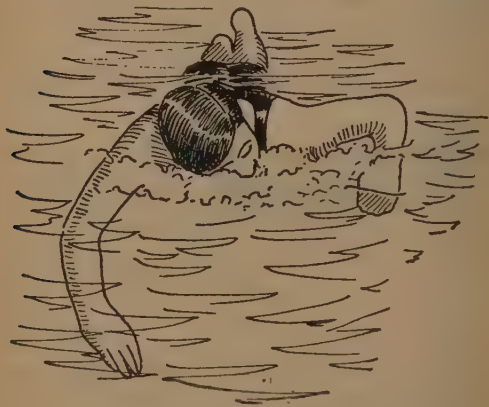


FIG. 73.—American crawl

much with head and shoulders, crossing the arms over, and stroking too fast with the arms.

The face should lie in the water to a depth determined by a line—the juncture of the forehead with the hair of the head. (See illustration.)

There is absolutely no relation in time or number of beats of the feet to the number of arm strokes. Each works separately and independently of the other.

Relaxation and coordination are paramount to success in speed swimming.

For short races the swimmer should breathe about every 30 feet. In a longer swim a breath may be taken at the finish of each left-arm stroke by turning the head sharply back and to the left. The air is expelled from the lungs while the face is flat in the water. Breathing in the crawl is exactly like that in the side stroke with one arm out of the water.

THE TRUDGE CRAWL

This is a combination of the trudgeon and the crawl. Swim the trudgeon. Now at the finish of the scissors kick introduce two beats of the crawl kick. That's all there is to it. This is a great stroke for distance swimming. It is slightly faster than the trudgeon and is rather restful because of the variety of the kick. Breathe as in the trudgeon.

THE AMERICAN BACKSTROKE

Here again we have a direct relation to a stroke already learned. The leg action is exactly the same as in the American crawl, the only difference being that the swimmer is on his back. Invariably the best crawl swimmers make the best backstroke swimmers. As Mr. Eckhart, of Chicago, says: "Simply turn a good crawl swimmer over on his back and tell him to swim his crawl."

The arm action is slightly different. The elbow is brought up and forward out of the water. As it is raised the arm is bent sharply at the elbow. The whole arm is carried forward and unfolded at the instant of entering the water. The arms are worked alternately.

The most common fault is a tendency to raise the head and chest too high.

THE BREAST STROKE

If it became necessary to stay afloat for several hours, the breast stroke would be very useful in effecting a rest through change of exercise. A good breast-stroke swimmer can undoubtedly remain afloat much longer than a swimmer using some other stroke, all other things being equal. Other than this, the breast stroke is of little value. However, this is sufficient reason for all swimmers knowing how to swim it.

The frog kick is used. The movements are:

1. With the swimmer lying on his abdomen the legs are drawn up under him to the "full knee-bend" position.

2. The legs are spread apart as wide as possible, knees straight.

3. The legs are brought together with a powerful propelling motion and held straight with the knees and ankles together and the toes pointed, in which position they remain while coasting and until after the arm movement.

The arm movement consists of—

1. Holding the hands, palms together, thumbs up but well against the forefingers. The hands are just under the chin. They are then shoved forward, rotating inward until the backs are touching, palms are outward, thumbs are down, and the arms are fully extended toward the front.

2. The hands are pulled backward in the horizontal plane to the sides.

3. They are again brought up under the chest in front of the chin.

The hands are shoved forward at the moment the legs are kicked; the body is held straight and almost rigid. When the coasting speed has partly slackened, the swimmer pulls with his arms. At the finish of the arm stroke the legs are drawn up and kicked.

Breathing may be accomplished by swimming with the head out of water, taking air at the finish of the arm stroke and expelling it while coasting, or by swimming with the face in the water and taking air and expelling it in the same way.

Common faults are failure to spread the legs wide enough just before the kick, letting the legs sink too deep and arching the back, stroking too fast. (The swimmer should take advantage of the opportunity to coast.)

TREADING WATER

This consists of standing upright in the water without the use of the hands, and may best be done by using the dog-paddle kick. Simply go through the motion of climbing a ladder or telephone pole with the legs only. This is sufficient to support the body with the head high out of the water. The hands may be employed at will.

CONCLUSION

Swimming is a healthful exercise which develops the body symmetrically. It is a pleasure sport and a safety factor for anyone who might chance to be near the water during their lifetime. Everyone should know how to swim, and anyone who already knows how may improve style and speed with a few hours' practice. Speed depends upon style, coordination, strength, and endurance. Everyone who swims wants **more speed.**

Practice often on your style, and you will find that a miracle is performed, for through your practice of style you will have gained coordination, strength, and endurance.

Do not stiffen up, but stay relaxed as nearly as possible at all times.

CHAPTER 16

OPPORTUNITIES IN THE NAVY

WHAT THE NAVY OFFERS

After a man has mastered the general military details of the profession, the Navy holds forth a number of different specialties with excellent opportunities for instruction and training therein. Early in his enlistment it will pay every man to decide for which of these numerous branches he deems himself best fitted, constantly bearing in mind the fact that irrespective of his rating, he must be first a man-of-wars-man, and, secondly, a specialist in his own particular rating.

Application and industry in any of the Navy branches, combined with absolute obedience and strict compliance with the rules of military discipline, can not fail to win for the intelligent man promotion to the rating of chief petty officer. Having attained this rating, men of ambition and ability are often promoted to the rank of warrant officer, and every opportunity is given the warrant officer to fit himself for a commission.

SERVICE SCHOOLS

The bureau's policy in regard to service schools changes from year to year, depending upon the requirements of the fleet.

The schools are grouped into four general classes, A, B, C, and D. The schools belonging to these classes are enumerated below.

Class A	Class B	Class C	Class D
Bugler. Musician. Radio operator. Electrical. Machinist's mates. Artificer. Hospital Corps men. Aviation mechanics. (1) Chief machinist's course. (2) Metalsmith's course. (3) General utility course. Aerographer. Torpedomen.	Optical. Sound. Radio material. Gyrocompass. Torpedomen. Pharmacist's mates. Cooks and bakers. Aviation machinist's mates. Aviation instrument. Photographer. Stenographer. Fire control. Bugle masters.	Submarine. Aviation pilot. Pigeon training. Parachute. Recruiters. Naval Academy preparatory.	Fuel oil. Ford fire-control instrument. Motion picture. Underwater cutting torch. Gas mask. Aircraft armament. Gas chamber instruction.

Nonrated men only are eligible for class A schools, except a few individual requests of blacksmiths and coppersmiths will be considered for electroplating instruction in the aviation metalsmith course.

Petty officers only are eligible for class B schools, except in the case of fire-control school and photographers' schools.

In class C the recruiters school is for petty officers only; in class D the underwater cutting torch school is for qualified divers; and gas mask school for petty officers only.

The manner of making out requests to these schools should be obtained from the division officer. The length of the courses is given in a Bureau of Navigation circular letter or in the Bureau of Navigation Manual.

GENERAL REQUIREMENTS FOR ENTRY TO SERVICE SCHOOLS

The requirements for entry to any of these service schools are—

(a) Detail to school should be desired by the man concerned.

(b) He must have a good record.

(c) He must have shown aptitude for the trade represented by the school.

(d) He must possess an elementary knowledge of arithmetic and be able to work simple problems in addition, subtraction, division and multiplication, and cancellation, decimals, and simple proportion.

(e) He must be able to read, spell, and write English with a fair degree of ability, and, in general, possess the equivalent of a grammar-school education.

(f) He must receive a mark of not less than 50 in the general classification test, given by an officer in accordance with the bureau's instructions (nonrated men only).

(g) He shall not have attended any other school during current enlistment except that a graduate of an elementary school (class A) may attend one advanced school (class B) or one special school (class C) during the same enlistment; also a graduate of an advanced school (class B) may attend one special school (class C) during the same enlistment.

(h) A statement signed by the man concerned that no reasons exist nor can any be foreseen that will necessitate a request for a special-order discharge must be filed with his record.

(i) There shall be at least two years remaining to serve on current enlistment or enlistment as extended at date of completion of the course.

APPOINTMENT OF ENLISTED MEN TO NAVAL ACADEMY

The law authorizes the appointment of 100 midshipmen annually from the enlisted personnel of the Navy

and Marine Corps. The Secretary of the Navy may appoint not more than 25 midshipmen to the Naval Academy from the Naval Reserve and the Marine Corps Reserve under similar conditions as prescribed by law for appointments from enlisted men of the Navy. The men are first required to take a preliminary examination to determine their qualifications and, if found satisfactory, are then sent to the Naval Academy preparatory class for further preparation for the regular Naval Academy entrance examinations. The 100 men who stand highest in these entrance examinations and who make a passing mark in each subject will be appointed midshipmen.

The following are the qualifications necessary for enlisted men who want to become midshipmen:

- (a) Be of officer caliber.
- (b) Be a citizen of the United States.
- (c) Have enlisted in the Navy or Marine Corps on or before July 1 of the year preceding that in which the examination is held.
- (d) Be not less than 16 or more than 20 years of age on April 1 of the year in which the examination is held.
- (e) Have had two years in high school or an equivalent education and have passed successfully at least two half years of algebra and one-half year geometry.
- (f) Be able to pass the required examination.

PROMOTION TO WARRANT RANK

The qualifications necessary for promotion to warrant rank are as follows:

- (a) Must be under 35 years of age on date of appointment.

(b) The average marks in *proficiency of rating* as shown by his service record, excluding the marks assigned during his first year of service, must be not less than 3.4 on a scale of 4.0.

(c) The man must be able to read and write English with facility, understand the first four rules of arithmetic and proportion, be able to keep a correct account of stores, and be thoroughly conversant with all instructions and regulations pertaining to the duties of the grade for which he is to be examined.

(d) The man must be able to pass the required professional examination.

(e) The man must be serving under continuous service as a chief petty officer or petty officer, first class, have not less than five years' sea service, and at least one year must have been served in the rating of chief or petty officer, first class.

PROMOTION TO COMMISSIONED RANK

Warrant officers, including chief warrant officers, within the age limit of 35 years, who have served not less than four years as warrant officers and who can pass a satisfactory examination, may obtain commissions in the line of the Navy.

Advancement in rating—General. See page 217.

Advancement in rating—Service qualification. See page 217.

Advancement in rating—Qualifications in marks. See page 218.

PAY GRADES

The following is the distribution of all ratings to the eight pay grades in our Navy:

Grade	Pay per month	Class or rating
1	\$126. 00	Chief petty officers (permanent).
1-A	99. 00	Chief petty officers (acting).
2	84. 00	Petty officers, first class; officers' stewards and cooks, first class; musicians, first class (Naval Academy band).
3	72. 00	Petty officers, second class; officers' stewards and cooks, second class; musicians, first class.
4	60. 00	Petty officers, third class; firemen, first class; officers' stewards and cooks, third class; musicians, second class (Naval Academy band).
5	54. 00	Nonrated men, first class (except firemen, first class, and musicians, first class); firemen, second class; musicians, second class; mess attendants, first class.
6	36. 00	Nonrated men, second class (except firemen, second class, and musicians, second class); firemen, third class; mess attendants, second class.
7	21. 00	Nonrated men, third class (except firemen, third class); mess attendants, third class.

For detailed information on pay see chapter 21.

THE FUTURE THE NAVY HAS TO OFFER

The Navy offers a young man who wants to make good a real future. There is not a place in civil life that can compare with the Navy in this respect. Here are a few of the opportunities that the Navy offers you:

(a) Fine courses of training in practically every profession.

(b) A clean, wholesome, and honorable position in life.

(c) Plenty of leave and liberty and every facility for recreation. No place in civil life can offer you anything to compare with this.

(*d*) Rapid promotion to men who study and work. In five or six years a good man can rise to the higher-pay grades.

(*e*) Higher pay in shorter time than can be obtained anywhere.

(*f*) Excellent opportunities to reach warrant and commissioned ranks. Either of these ranks carry with them the privileges, the honor, and the responsibilities not surpassed by any of the big professions in civil life.

(*g*) Free medical, dental, and hospital facilities to all service men. Free medical services to your family. Full pay as long as you are sick, provided this sickness is not due to your own misconduct. In civil life sickness means large doctor bills and usually a stoppage of pay.

(*h*) A permanent job. You can be discharged only by a sentence of a court-martial after your first enlistment, and then only when your offense has been of a very serious nature. In civil life a dull period, a run-in with the boss, or any one of a dozen insignificant reasons can cause you to lose your job.

(*i*) A fine opportunity to see the world. No man who has spent several cruises in the Navy has failed to see a large part of the world.

(*j*) Pensions for men who have been injured in line of duty.

(*k*) Transfer to the Fleet Naval Reserve after 20 years' service and retirement after 30 years' total naval service with a fixed income all your life.

(*l*) The facilities of the Navy relief in case your family needs it and cheap Government insurance are also available.

CONCLUSION

You will all hear a lot of grumbling from men about you. To grumble is human. Men grumble because they are served turkey in place of goose, or vice versa. Grumbling is as necessary to most men as fleas are to a dog. A reasonable amount is good for both of them, as it keeps them interested in life. It is the almost invariable rule that men who grumble mean nothing by it. Too much grumbling, however, will get any man in wrong in time, and it is best to limit this art to what is necessary for the man's pleasure in life.

A cheerful disposition, a helpful hand, a willingness to work, a will to study, and a willingness to get ahead in life will insure any man's success in our Navy. Aim for a commission from the time you enter the training station. You may not make it, but you are sure to get closer to it than you would have done if you had not aimed at all. The Navy always has a lot of room on the top for the good men. It is only the nonrated grades that are kept filled. Determine now that from this day on you will make good. The Navy wants the trained man. It wants to help a man who wants to get ahead, and it is always glad to give a higher rating, a higher pay, and a higher respect for that type of man.

CHAPTER 17

REPORTING FOR DUTY ABOARD SHIP

1. This little talk is given here in order to give you an idea of how you will be taken care of on board ship and to give you a little advice on how you can take better care of yourself.

2. A draft will be made up at the training station of men who have completed their training. This draft, under command of competent petty officers, who will carry your records, pay accounts, and transfer papers, will be sent to report to the senior officer present of the ships to which this draft is assigned. Each man in the draft will carry his own bag and hammock, the bag being wedged around by the hammock and both securely fastened together so as to make one bundle of the two.

3. The whole draft is usually taken aboard the flagship or senior officer's ship. You will be instructed to fall in ranks with your bag and hammock with you. Now will come a tedious period of waiting. The petty officer in charge of you will report to the officer of the deck, who will order him to report with your records, etc., to the senior officer present or his representative. The senior officer will then assign certain numbers of you to each ship under him. It takes considerable time to sort out your papers and get proper records of your transfers, especially if you are in a large draft. As soon as the proper papers are made out, you will be mustered into groups as assigned to each ship. By

this time the senior officer has notified each ship concerned to send a boat to the flagship to receive its draft. You will now be sent to your future home.

4. When you get aboard, the officer of the deck will have you fall in again as you did on the flagship. He will muster you and then send your records, etc., to the executive officer. Again you will have to wait until the executive officer can assign you to proper divisions aboard ship and get your papers straightened out. In many cases the heads of departments on board ship, such as the navigator, gunnery officer, engineer officer, and first lieutenant, will inspect your records and then look you over in order to find some one especially fitted for particular jobs in their respective departments. Naturally, you who have the best records will receive the most consideration. Some few of you are almost certain to be picked out here for the electrical division, plotting room, or other important division for at least a tryout. You may be given a chance to say whether you want the engineer or the deck divisions. If possible, you will be assigned according to your wishes, but this is not always possible, as the vacancies must be filled in each division, and it may happen that there are more vacancies in one division than men in the draft volunteer for. You will now be mustered into groups according to which division you have been assigned. Your division officer will inspect you and then detail one of his petty officers to show you your part of the ship.

5. On large ships, especially battleships, when a fairly large draft comes aboard, it may be formed into a special division, called Division X, and kept in this division for one month. You are assigned special quarters and live more or less apart from the rest of

the crew. You will have a special officer and several of the ship's best petty officers over you during this time. This month's special training is given you so that you can have more time, more direct supervision, and a better opportunity to learn about your future home and how to carry on aboard it.

6. You will be shown how to swing your hammock and stow your clothes. Then you will be shown the head and wash rooms and told how to keep your clothes and persons clean. Then you will be given instruction in ship's routine and how you carry on a day's work aboard ship. Your drill periods will be taken up in learning every part of the ship. You will go into every department, and everything will be explained to you. Then they will tell you about the ship's organization, her captain, her executive officer, her heads of departments, and her division officers. Then you will be told about the emergency drills, general quarters, fire drill, abandon ship, fire and rescue party, and collision drill, and all the different alarms sounded for these drills. By the end of the month you will know your new home quite well and will know how to live in it. This first month aboard is the hardest month of all. You feel completely lost—we all did. It is almost, you think, as bad as the detention period, but it is not. You get liberty, and, what is more, you soon get on to the life and you begin to like it at once.

7. At the end of this month, or, if you were in a small draft and were not put in Division X, you are assigned to divisions as stated in paragraph No. 4. Your division petty officer will show you where to hang your bag, stow your hammock, swing your hammock, where you eat, and, in general, the same as explained for Division X. You will start mingling

with your new shipmates and your "troubles" will begin. Every one of your shipmates, especially those who have just "learned the ropes" themselves, will start having a lot of fun with you. They will send you after "hammock ladders," tell you to wind the "anchor watch," and thousands of similar jack-tar jokes. You will have to stand this good-natured hazing, for you can not stop it amongst these live youngsters. It is similar to what you would have to stand as a freshman if you entered a college. Grin and bear it. A few months hence you can try it on the next draft yourself.

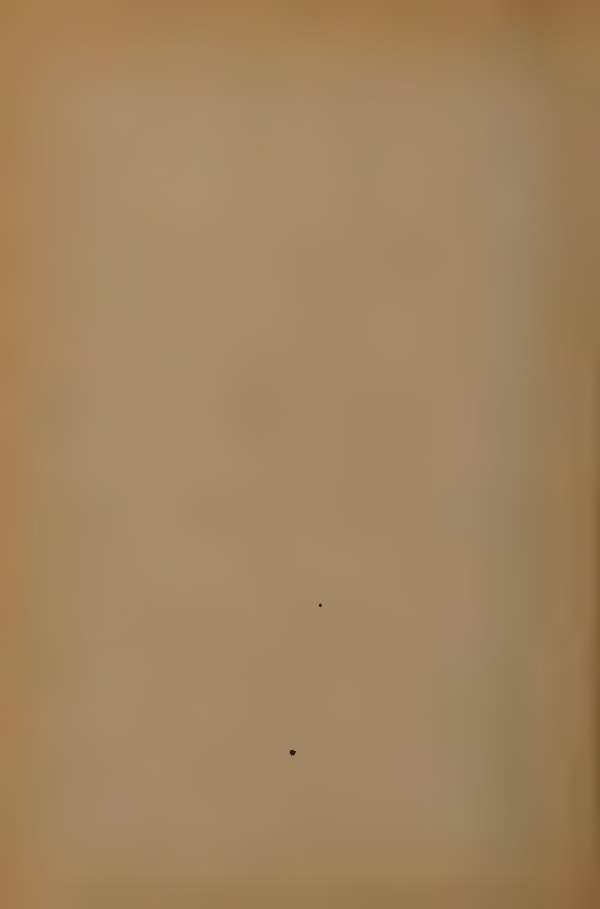
8. Due to the natural skylarking tendency of your young shipmates, it is by far best that you ask whatever information you want from your petty officers. They know how to give it to you, and will gladly give you the information you want.

9. Your division officer will make out your proper station bill and will have a petty officer explain it carefully to you. Again, you must remember that your best friends are your officers and your petty officers. Go to them for help, watch them, and imitate them.

10. You will soon be deep in your division duties, and with work, drills, liberty, movies, athletics, happy hours, target practices, and cruising you will never be lonesome or unhappy. You are just starting up the ladder. To get up you must study and work hard. You have fine training courses to study, which are issued to you free of charge. Your officers and petty officers are anxious to help you in them. Everything is ready to make it easy for you to get ahead. With energy and ambition on your part your future is bright. If you do not get ahead in the long run, you will have to blame chiefly yourself.

PART TWO

SUBJECTS ALL ENLISTED MEN MUST KNOW



CHAPTER 18

SUBJECT A—DISCIPLINE AND DUTY

THE TWOFOLD NATURE OF DUTY IN THE NAVY

When a man enlists in the Navy, no matter in what rating, the nature of his duties is twofold. The duties are—

First, his military duties.

Second, the special duties of the rating in which he enlists.

(a) **Military duties.**—It can not be too strongly impressed, not only upon every recruit, but also upon every enlisted man, whatever his length of service may be and whatever his rating, that, entirely apart from the duties of that rating, he has, by virtue of the mere fact that he is in a military service, certain duties of a military nature. Though his ordinary duties may be such as to reduce the amount of his military duties (for example, to lessen the amount of drill), nevertheless the military side of the profession is always present, and its responsibilities are always in evidence. However expert a fireman or a machinist, a yeoman, or a cook a man may be, he must realize the fact that when he enlists in the Navy the greatest difference between life in the service and in civil life is that in the Navy skill in his rating constitutes only a part of his duty. Your general quarters station and your duties at this station is your big job. This job must be done perfectly every time you take this station. The battle efficiency of your ship depends on

the efficiency of each man in the ship. You may think your job is a small one, but every man's job is small compared to the ship as a whole. Yet every job is of the utmost importance. Learn every detail of your duties at general quarters, and practice doing these duties perfectly every time you go to this station.

(b) **Rating duties.**—The duties of your rating come next in importance to your military duties. You must be expert in them in order to be promoted. To become expert in them, you must work hard and study hard. You can not expect rapid promotion without effort on your part. If you do only what you are told to do, if you do not try to improve yourself by hard study and effort, you can never expect advancement in your profession. Doctors are made by years of hard study and several more years of hard work in hospitals before they can expect fair success in their profession. Men in other professions need years of study and then years of experience before they are considered good in their profession. But all of them have to keep on studying and practicing if they expect to stay good. No man can stay at the top of his form without continuous effort on his part. As soon as he stops his efforts to keep on improving himself, he gets into the well-known rut which steers him on a down grade to failure.

THE IMPORTANCE OF ACCURATE KNOWLEDGE

Accurate knowledge is necessary if you are to succeed in any job. Without accurate knowledge you waste time, bungle the job, and give everyone the impression that you are incompetent or worthless. Many of you have probably tried to overhaul an auto for the first time and without knowing much about it. If you have,

you probably remember how long it took you, how greasy and dirty you got, how hard it was to put parts together, and how unsatisfactory the whole job was. You have also seen how a man who knew his job could take this same car, and in a short time, without getting particularly greasy or dirty, overhaul and put the car in fine shape. This is due to the man having accurate knowledge of his job. Now accurate knowledge can be obtained by every rating on board ship. There are training courses for each rating, issued free of charge to everyone. Use them. Do not try to learn by hard knocks and experience alone. That is slow and inefficient. The study of a good textbook for a few hours will probably teach you more electricity than Franklin learned in his whole life. In one month of study and practice you can learn more about your rating than you could learn in two years of "doing just what you are told," and no more.

DISCIPLINE

Discipline teaches a man to do cheerfully, and without question, what he is told to do, to follow his leader, and to obey. A man has fine discipline when he gives instant and willing obedience to all orders, and, in the absence of orders, does what he believes the order would have been in the particular existing situation had he received one. Discipline does not mean short liberties, restrictions of personal conduct, and forced obedience to all sorts of rules and regulations. It means, rather, self-control, a cheerful obedience to necessary laws and regulations, and a square deal to your fellow man. By self-discipline you gain power to be a leader among men. Through discipline you wield a strong, unified power that means success in emergencies. Without

discipline a ship's company is but a disorganized mass of men. With discipline it is a mighty fighting force. You must learn discipline as you would learn a trade. It is the most important part of your most important duties—your military duties.

RULES OF DISCIPLINE

- (a) Obey orders cheerfully and willingly.
- (b) Obey the last order received from any responsible senior.
- (c) Show respect to your seniors at all times.

QUESTIONS OF DISCIPLINE

Q. What is meant by obedience to orders?

A. It is a prompt, ready, zealous, and complete compliance with orders given. A slow, unwilling, partial compliance with orders is as bad as flat disobedience, and in such cases a guilty person should be reported.

Q. What is the first principle of discipline?

A. A prompt obedience to the orders of superiors.

Q. How is this obtained and enforced?

A. While it is often necessary to have recourse to punishment for those who deliberately violate orders, it must not be supposed that discipline and punishment go hand in hand and that one is dependent on the other. Discipline is obtained by a constant attention to the minor details of life on board ship; by requiring an absolute compliance with the details of all drills and evolutions, correcting and, if necessary, reporting every infraction of the regulations.

Q. Next to a strict obedience to orders, what always marks a well-disciplined ship's company?

A. Quickness of movement and complete absence of noise, confusion, and "singing out."

Q. What language is always improper on board ship?

A. Profane, abusive, obscene, loud, boisterous language, and noises, disturbances, or confusion of any kind.

THE NATURE OF AN ORDER AND THE NATURE OF A COMMAND

It is necessary to understand the difference between an order and a command. When an officer gives a man an order to perform a certain task, the officer considers that the man has some intelligence and initiative. He gives an order in such a way that the man is allowed some discretion in the manner in which the details of order will be executed.

But when an officer gives a man a command, the man is directed to perform a certain act in a certain definite way. The man is allowed no discretion in the manner in which the details will be executed.

An order contains no details of the way a task shall be accomplished, but a command does.

CHAPTER 19

SUBJECT B.—WHAT THE SERVICE OFFERS

WHAT THE NAVY OFFERS

After a man has mastered the general military details of the profession, the Navy holds forth a number of different specialties with excellent opportunities for instruction and training therein. Early in his enlistment it will pay every man to decide for which of these numerous branches he deems himself best fitted, constantly bearing in mind the fact that, irrespective of his rating, he must be first a man-of-war's-man, and secondly, a specialist in his own particular rating.

Application and industry in any of the Navy branches, combined with absolute obedience and strict compliance with the rules of military discipline, can not fail to win for the intelligent man promotion to the rating of chief petty officer. Having attained this rating, men of ambition and ability are often promoted to the rank of warrant officer, and every opportunity is given the warrant officer to fit himself for a commission.

THE FUTURE THE NAVY HAS TO OFFER

The Navy offers a young man, who wants to make good, a real future. There is not a place in civil life than can compare with the Navy in this respect. Here are the opportunities that the Navy offers you:

(a) Fine courses of training in practically every profession.

(b) A clean, wholesome, and honorable position in life.

(c) Plenty of leave and liberty, and every facility for recreation. No place in civil life can offer you any thing to compare with this.

(d) Rapid promotion to men who study and work. In five or six years a good man can rise to the higher pay grades.

(e) Higher pay in shorter time than can usually be obtained in civil life.

(f) Excellent opportunities to reach warrant and commissioned ranks. Either of these ranks carry with them the privileges, the honor, and the responsibilities not surpassed by any of the big professions in civil life.

(g) Free medical, dental, and hospital facilities to all service men. Full pay as long as you are sick, provided this sickness is not due to your own misconduct. In civil life sickness means large doctor bills and usually a stoppage of pay.

(h) A permanent job. You can be discharged only by a sentence of a court-martial after your first enlistment, and then only when your offense has been of a very serious nature. In civil life a dull period, a "run-in" with the boss, or any one of a dozen insignificant reasons can cause you to lose your job.

(i) A fine opportunity to see the world. No man who has spent several cruises in the Navy has failed to see a large part of the world.

(j) Pensions for men who have been injured in line of duty.

(k) Transfer to the Fleet Naval Reserve after 20 years' service and retirement after 30 years' total naval service with a fixed income all your life.

(l) The facilities of the Navy relief in case your family needs it and cheap Government insurance are also available.

Service schools and requirements for entry. See pages 195-197.

Appointment of enlisted men to the Naval Academy. See page 197.

Promotion to warrant rank and commissioned rank. See pages 198-199.

ADVANCEMENT IN RATING—GENERAL

Before a man may be advanced in rating he must:

- (a) Meet certain requirements as to length of service.
- (b) Meet certain requirements as to marks in proficiency in rating and conduct.
- (c) Pass satisfactorily a technical examination.
- (d) Be recommended by his commanding officer.
- (e) The Bureau of Navigation must have authorized advancements to the rating in question.

ADVANCEMENT IN RATING—SERVICE QUALIFICATIONS

Men are qualified for advancement when they fulfill the requirements of service as provided below:

From—	To—	Service
Apprentice seaman.....	Seamen, second class; firemen, third class.	4 months in naval service.
Seaman, second class.....	Seaman, first class.....	6 months in lower rating.
Firemen, third class.....	Fireman, second class.....	Do.
Hospital apprentice, second class.....	Hospital apprentice, first class.	Do.
Bugler, second class.....	Bugler, first class.....	Do.
Mess attendant, third class.	Mess attendant, second class.	Do.
Fireman, second class.....	Fireman, first class.....	12 months in naval service.
Musician, second class.....	Musician, first class.....	Do.
Mess attendant, second class.	Mess attendant, first class.	18 months in lower rating.
Mess attendant, first class..	Officers' cook, third class..	12 months in lower rating.
	Officers' steward, third class.	Do.

From—	To—	Service
Any nonrated man.....	Lowest petty officer rating, except to TC 1c.	16 months in naval service.
Officers' cooks; officers' stewards.	Next higher ratings in messman branch	12 months in lower rating.
Petty officer, third class...	Petty officer, second class	Do.
Petty officer, second class...	Petty officer, first class....	12 months in lower rating and hold for permanent appointment therein.
Petty officer, first class....	Chief petty officer.....	12 months in lower rating and hold permanent appointment therein; at least 1 year's sea service as petty officer, first class.

ADVANCEMENT IN RATING—QUALIFICATIONS IN MARKS

Men are qualified for advancement when they fulfill the requirements in marks as prescribed below:

To—	Proficiency in rating	Conduct
Seaman, second class.....	No requirements as to marks.	No requirements as to marks.
Fireman, third class.....	do.....	Do.
Other nonrated grades except officers' stewards and cooks.	No mark less than 2.5 for preceding 6 months and not less than 3.5 for quarter preceding advancement.	No mark less than 2.5 and an average of not less than 3.5 for 6 months.
Officers' stewards; officers' cooks.	No mark less than 2.5 for preceding 12 months and not less than 3.5 for quarter preceding advancement.	No mark less than 3 and an average of not less than 3.5 for 1 year.
Lowest petty officer rating from nonrated grades.	do.....	Do.
Petty officer, second class, from third class.	No mark less than 3 and an average of not less than 3.5 for 1 year.	Do.
Petty officer, first class....	do.....	Do.
Chief petty officer.....	do.....	Do.

ADVANCEMENT IN RATING—WHEN AUTHORIZED

(1) Commanding officers are authorized to advance apprentice seamen to seamen, second class, without regard to vacancies, and to firemen, third class, to fill vacancies in complement.

(2) Commanding officers are authorized to advance men to nonrated grades, except officers' stewards, officers' cooks, and musicians, first class, to fill vacancies in approved complement without prior reference to the bureau.

(3) From time to time the bureau issues instructions as to authority for advancing men to petty officer ratings.

NECESSITY OF GOOD RECORD

A good record implies that you are obedient. As explained before, obedience makes a ship a fighting power. A lack of obedience on your part, such as disobedience to orders or disrespect for your senior, will get you on the report. All reports are placed in your service record, and your record is closely examined by every examining board before which you may appear. No one without a good record can be promoted. Besides, a good record shows that you are trustworthy. If you should get into trouble, a previous good record will always help you or make your punishment less severe. A good record will always help you to get special consideration at all times.

THE SHIP AS A TRAINING SCHOOL

Most of the petty officers in the Navy have been trained and promoted on board ship. The trade schools train only a few of them except in a few high ratings. Your ship offers you the same opportunities

for promotion whether you have graduated from a trade school or not. But to get promoted you must work and study. You must study the training courses supplied you and do your work well. Obedience, of course, is necessary for promotion whether you go to a trade school or stay aboard ship.

DIFFERENCE BETWEEN ACTING AND PERMANENT APPOINTMENTS

When a man is selected for the position of a petty officer either from an eligibility list in the bureau or otherwise, and the necessary authority to advance him has been given in accordance with current instructions, the commanding officer issues to him an acting appointment. This acting appointment may be revoked at any time by the commanding officer of the ship on board which he may be serving should the petty officer prove not qualified for the position he may be holding.

An entry is made in the service record of all appointments issued or renewed.

Men who are discharged with acting appointments as chief petty officer or petty officer, first or second class, and who reenlist under continuous service are reenlisted in the next lower rating and immediately issued a renewal of the acting appointment in the rating held at date of discharge.

Men discharged with acting appointments as petty officers, third class, are reenlisted under continuous service in the ratings held at date of discharge and their appointment immediately renewed.

PERMANENT APPOINTMENTS

Permanent appointments are issued by the Bureau of Navigation to chief petty officers, petty officers, first

class, and petty officers, second class, when recommended by their commanding officers.

Before being recommended for a permanent appointment a chief petty officer must—

(a) Have served one continuous year under the acting appointment in the rating, and

(b) Have no mark less than 3 in any subject except marksmanship and an average of not less than 3.5 in both proficiency in rating and conduct for one year considered separately.

Before being recommended for a permanent appointment a chief petty officer must—

(a) Have served one year under an acting appointment in the rating on vessels not attached to a shore station, as a member of the flying personnel of rigid airships, in the field with marines beyond the continental limits of the United States, or, in the case of aviation ratings, with an aviation detachment or unit assigned to the forces afloat;

(b) Have no mark less than 3 in any subject except marksmanship and an average of not less than 3.5 in proficiency in rating, conduct, and ability as leader of men for one year; and

(c) Have passed a satisfactory examination in the duties of his rating.

Permanent appointments are issued to protect petty officers in their rating and may be revoked only by the bureau for incompetency or by sentence of a court-martial.

The effective date of permanent appointment is determined by the bureau and is stated on the face of the appointment. The appointment is delivered to him at quarters. It is the property of the man, but may be kept with his service record or continuous-service certificate if he so desires.

Failure to receive an honorable discharge or to reenlist within three months from date of honorable discharge cancels the permanent appointment.

Men discharged with permanent appointments and reenlisting under continuous service are reenlisted in the rating held at date of discharge.

CONTINUOUS SERVICE MEN

The instructions regarding reenlistments and extension of enlistments follow:

Men who have been discharged with honorable discharge or with ordinary discharge, recommended for reenlistment, may be reenlisted within three months from date of discharge at any recruiting station, on board any naval vessel, or at any shore station, provided he is physically qualified.

Men are reenlisted under continuous service for periods of four or six years only, at the option of the men concerned.

Men holding permanent appointments as chief petty officers, petty officers, first class, and petty officers, second class, reenlisting under continuous service are reenlisted in the rating held at discharge. Petty officers, third class, and nonrated men are reenlisted in the rating held at discharge. Men discharged with acting appointments as chief petty officers, petty officers, first class, or petty officers, second class, reenlisting under continuous service are reenlisted in the next lower rating and immediately issued a renewal of the acting appointment held at the date of discharge.

No man is reenlisted at sea. If the enlistment of a man who has indicated his intention of reenlisting immediately on board expires while at sea, he will be detained until arrival at the next port, when he will be discharged, and, if qualified, reenlisted.

REENLISTMENTS NOT UNDER CONTINUOUS SERVICE

Men who have been discharged with honorable discharge or with ordinary discharge, recommended for reenlistment, are reenlisted after three months from date of discharge only at regular recruiting stations or naval training stations.

The bureau issues instructions to the recruiting service from time to time, setting forth the ratings in which men may be reenlisted with broken service. In general, these ratings will be only those in which vacancies exist in the service as a whole. Instructions as to the maximum age and other requirements will also be issued.

Former service men are reenlisted with broken service for periods of four or six years only, at the option of the men concerned.

EXTENSION OF ENLISTMENTS

The term of enlistment of an enlisted man may, by his voluntary written agreement, be extended for one, two, three, or four full years from date of expiration of his then existing term of enlistment.

Except by authority of the bureau, one-year extensions are authorized only for the following purposes:

(a) To complete necessary time for transfer to the Fleet Naval Reserve.

(b) To have necessary time remaining on current enlistment as extended to meet the bureau's requirements for entrance to a service school.

(c) To have necessary time remaining on current enlistment as extended to meet the requirements for

foreign duty when attached to a vessel ordered to a foreign station.

The commanding officer is authorized to cancel an extension agreement at any time prior to the date the extension term begins to run, provided the man's conduct warrants that action.

The same physical examination is required for extension of enlistments as for reenlistments.

Generally a man is not permitted to extend his enlistment until about the completion of the original term of his enlistment. For certain purposes, however, such as qualifying for a foreign cruise or for entrance to a service school, it may be necessary in some cases to authorize extensions a considerable time in advance.

Enlistments already extended may be again extended, but the aggregate of all extensions shall not exceed four years.

LEAVE

Authorized absence from duty of more than 48 hours is considered as "leave."

Commanders in chief, senior officers present, and commanding officers are authorized to grant leave of absence to enlisted men whose services can be spared, not to exceed 30 days, exclusive of travel time, in any one calendar year. In cases of emergency additional leave may be granted at discretion. In general, leave is so distributed throughout the year as to maintain the available force at a maximum when most needed.

Applications by men on leave for an extension of leave must be addressed to their commanding officers, and not to the Navy Department.

All men who receive an honorable discharge by reason of expiration of enlistment, and reenlist within 30 days from date of discharge, may be granted leave,

without travel time, of 30 days, less the number of days elapsing since date of honorable discharge.

Charges for medical and dental expenses are allowed only when the enlisted man concerned is in a duty status at the time such expenses were incurred and only when proper Navy medical attendance is not available. It is also necessary that the man concerned or his commanding officer report the case promptly, as required by the Navy Regulations. It will thus be apparent that personnel on leave are entitled to incur no expenses for medicines or medical attendance that may be made the basis of a claim against the Navy Department. Should a man on leave require medical attendance and there be no facilities of the Medical Department of the Navy available, the commanding officer may revoke the remainder of his leave, whereupon he would become entitled to such expenses as are incurred subsequent to the revocation of leave. Enlisted men on liberty granted for a period of 24 hours or less are considered in a duty status for this purpose, and are therefore entitled to necessary civilian medical attention and treatment, provided the facilities of the Medical Department of the Navy are not available.

LIBERTY

Authorized absence from duty for less than 48 hours is considered as "liberty."

Unless the exigencies of the service or the unhealthfulness of the port prevent, no person is deprived of liberty on shore for more than 12 days, unless he be confined by sentence of court-martial, or under arrest for trial, or his usual conduct on shore is discreditable to the service.

Liberty is not granted to men who have venereal diseases except as provided in General Order No. 69.

SHORE DUTY

Except in certain ratings a man is not assigned to shore duty unless he has been in the service six years or has completed six years' duty on seagoing vessels since last tour of shore duty. The periods of six years mentioned must be in continuous service.

The exceptions mentioned are those ratings where the number of shore billets to be filled bears a greater proportion to those at sea than as 1 to 3. The bureau issues instructions with regard to those excepted ratings from time to time.

In determining eligibility for shore duty in the United States' service on shore beyond the seas, when combined with two or more years of sea duty, will be credited as duty on seagoing vessels.

The term of shore duty is two years.

Where practicable men are sent to shore duty in localities requested by them.

When the bureau has approved the official request for shore duty the man will be transferred to that duty when a vacancy exists, with due consideration given to the date of his request, length of service, rating, availability, and the character of duty to be performed on shore.

Duty on district craft and other vessels operating from shore stations may be either sea duty or shore duty. The bureau will issue instructions from time to time indicating by name of the vessels what kind of duty it considers duty thereon.

Men on shore duty, where no Government quarters or messing facilities are furnished, get \$1.20 per day for subsistence and \$0.75 per day for quarters in addition to their regular pay. If messing facilities are furnished, subsistence allowance is \$1 per day. If their shore

duty is in Alaska, Europe, Asia, or South America, these allowances are \$2.10 per day for subsistence and \$1 per day for quarters. If messing facilities are furnished, subsistence allowance is \$1.90 per day.

RETIREMENT

The application of an enlisted man of the Navy for retirement is made to the President of the United States via official channels, and in computing the 30 years necessary to entitle him to be retired all service in the Army, Navy, and Marine Corps is credited, the Civil War from April 15, 1861, to August 20, 1866, and during the Spanish-American War, from April 21, 1898, to April 11, 1899, is computed as double time.

PENSIONS

Any disabled enlisted man who has not been discharged for misconduct shall, after 10 years' service in the Navy or Marine Corps, be entitled to a pension if a board of survey, consisting of three naval officers, one of whom shall be a medical officer appointed by the Secretary of the Navy, shall recommend it.

After 20 years' service any enlisted man disabled from sea service by reason of age or infirmity, who has not been discharged for misconduct, shall, if he so elect, be entitled to a pension equal to one-half the pay of his rating when last discharged in lieu of being provided with a home in the Naval Home, Philadelphia.

REWARDS AND PRIVILEGES; MEDALS AND GRATUITIES

Seamen distinguishing themselves in battle or by extraordinary heroism in the line of their profession may be promoted to warrant officers, if found fitted,

upon the recommendation of their commanding officer approved by the flag officer and the Secretary of the Navy. Upon such recommendation they receive a medal of honor prepared under the direction of the Secretary of the Navy.

Any enlisted man of the Navy or Marine Corps who shall have distinguished himself in battle or displayed extraordinary heroism in the line of his profession shall, upon the recommendation of his commanding officer, approved by the flag officer and the Secretary of the Navy, receive a gratuity and medal of honor as provided for seamen in the paragraph above.

LIFE-SAVING MEDALS

Life-saving medals may be awarded to persons in the naval service by the Secretary of the Treasury on the recommendation of the Secretary of the Navy.

GOOD-CONDUCT MEDALS

Any enlisted person in the Navy serving under continuous service, or in an enlistment subsequent to a previous enlistment terminated by reason of expiration of enlistment, who, upon expiration or within three months before the expiration of his term of enlistment is recommended by his captain for obedience, sobriety, industry, courage, neatness, and proficiency receives a good-conduct medal.

Any such person who has received one medal will, if recommended at the expiration of any subsequent four-year term of enlistment, be given in place of a medal a clasp, which shall be worn above the medal on the same ribbon.

MANNER OF PRESENTATION

All medals, when practicable, are presented by the commanding officer at a general or special muster of the officers and crew and shall be worn on the prescribed occasions.

The commanding officer may forbid the wearing of medals by any person undergoing punishment.

MEDAL OF HONOR

The President is authorized to present, in the name of Congress, a medal of honor to any person who, while in the naval service of the United States, shall, in action involving actual conflict with the enemy, distinguish himself conspicuously by gallantry and intrepidity at the risk of his life above and beyond the call of duty and without detriment to the mission of his command or to the command to which attached.

DISTINGUISHED-SERVICE MEDAL

The President is authorized to present, but not in the name of Congress, a distinguished-service medal of appropriate design and a ribbon, together with a rosette or other device to be worn in lieu thereof, to any person who, while in the naval service of the United States, since the 6th day of April, 1917, has distinguished, or who hereafter shall distinguish, himself by exceptionally meritorious service to the Government in a duty of great responsibility.

NAVY CROSS

The President is authorized to present, but not in the name of Congress, a Navy cross of appropriate design and a ribbon, together with a rosette or other

device to be worn in lieu thereof, to any person who, while in the naval service of the United States, since the 6th day of April, 1917, has distinguished, or who shall hereafter distinguish, himself by extraordinary heroism or distinguished service in the line of his profession, such heroism or service not being sufficient to justify the award of a medal of honor or a distinguished-service medal.

CITIZENSHIP

No person can be appointed to any office in the Navy unless he is a citizen of the United States.

Every man who deserts the naval service of the United States in time of war is, upon conviction thereof, forever incapable of holding any office of trust or profit under the United States or of exercising any rights of citizens thereof.

NAVAL RESERVE

See pages 941-947.

RETIREMENT PAY

Payment on retirement after 30 years' service is as follows: Seaman, \$66.38 per month; first-class petty officer, \$94.50 per month; chief petty officer, \$133.88 per month.

ADDITIONAL PAY FOR MEDALS

Each enlisted or enrolled person of the naval service to whom is awarded a medal of honor, distinguished-service medal, or a Navy cross shall be entitled to additional pay for each such award at the rate of \$2 per month from the date of the distinguished act or

service on which the award is based, and each bar or other suitable emblem or insignia, in lieu of a medal of honor, distinguished-service medal, or Navy cross shall entitle him to further additional pay at the rate of \$2 per month from the date of the distinguished act or service for which the bar is awarded, and such additional pay continues throughout his active service, whether such service is or is not continuous.

No more than one medal of honor or one distinguished-service medal or one Navy cross is issued to any one person; but for each succeeding deed or service sufficient to justify the award of a medal of honor or a distinguished-service medal or Navy cross, respectively, the President may award a suitable bar or other suitable emblem or insignia to be worn with the decoration and the corresponding rosette or other device.

EXAMINING BOARDS AND EXAMINATIONS

The examining boards for all ratings below that of chief petty officer consist of three officers, at least one of whom shall have had at least two years' service in the regular Navy.

The examining board for chief petty officer ratings consists of three officers not below the rank of lieutenant (junior grade), at least one of whom must be not below that of a lieutenant.

When men on detached duty become eligible for advancement and there is not a sufficient number of officers available to organize an examining board, commanding officers may authorize such men to report at their own expense to any near-by station or ship for the purpose of being examined for advancement.

The Bureau of Navigation Manual prescribes the subjects which each rating must be examined in. Sub-

jects A to N, found in this manual, are a part of all examinations. All men who are to appear before an examining board for examination for promotion should get a list of subjects from their division officer. Rating courses and training courses for their ratings will ordinarily cover all subjects which may be asked by the examining board.

In order to be recommended for advancement by the examining board, a candidate must receive a mark of at least 2.5 in each subject. When this mark is assigned by averaging several subjects, a man must not be recommended who has received a mark less than 2 in any one subject.

CHAPTER 20

SUBJECT C.—ENLISTMENTS, DISCHARGES, COURTS-MARTIAL

ENLISTMENT IN GENERAL

(a) All first enlistments are now for a period of 4 years with a minimum age of 18 years. All first enlistments are made at Navy recruiting stations authorized by the Bureau of Navigation. Ratings open to first enlistments are published from time to time by the Bureau of Navigation. In general only the lower ratings and some of the lower grades of the artificers or special branches are allowed on first enlistments. Reenlistments under continuous service can be made on any ship or station to which a medical officer is attached. Reenlistments not under continuous service can only be made as for first enlistments.

(b) Physical examinations are required for both first enlistments and reenlistments.

APPRENTICE SEAMEN

(a) The enlisting and training of apprentice seamen is conducted by the Bureau of Navigation.

(b) A person enlisted as an apprentice seaman must be between the ages of 17 and 25, although at times the minimum age is raised to 18 years. If under 18

years, he must sign an agreement to serve in the Navy until he is 21, and he must have the written consent of his parent or guardian (whenever possible, his parent or guardian should accompany him to the recruiting station). If the candidate is 18 years of age or over, he is enlisted for four or six years.

(c) He must be able to read and write and be of robust frame, intelligent, of perfectly sound and healthy constitution, and free from any physical defects or malformation.

(d) No person who has been convicted of crime or who is known to be of bad character may be enlisted.

(e) Apprentice seamen are entitled to the benefits of the naval pension laws.

(f) As soon after enlistment as practicable apprentice seamen are transferred to a training station. The large training stations are at Hampton Roads, Va., Newport, R. I., San Diego, Calif., and Great Lakes, North Chicago, Ill. At the termination of the period of instruction at the training station, apprentice seamen are transferred to cruising ships.

DISCHARGE

(a) The six classes of discharges, with their conditions, are as follows:

(1) CLASS A.—DISCHARGES BY REASON OF EXPIRATION OF ENLISTMENT

Character of service	Conditions
Honorable.....	(1) Discharged at expiration of enlistment or within 3 months prior to that date, if for the convenience of the Government. (2) Average of marks for last 4 years of enlistment or enlistment as extended not less than 2.75 in proficiency in rating and 3 in conduct. If first enlistment, double weight to be given to marks for last two years. (3) Never convicted by general court-martial or more than once by summary court-martial, unless this requirement be waived by the Bureau of Navigation upon recommendation of commanding officer, based on extenuating circumstances or exceptional conduct subsequent to the court-martial.
Good.....	(1) Same as (1) above. (2) Average of marks as computed above less than those required for an honorable discharge, but not less than 2.5 in proficiency in rating and 2.75 in conduct. (3) Recommendation for reenlistment.
Indifferent.....	(1) Same as (1) above. (2) Average of marks as computed above less than 2.5 in proficiency in rating or 2.75 in conduct. (3) Not recommended for reenlistment.

(2) CLASS B.—DISCHARGES BY REASON OF MEDICAL SURVEY FOR PHYSICAL OR MENTAL DISABILITY

Character of service	Conditions
Honorable.....	(1) Discharged as result of approved board of medical survey for physical or mental disability not the result of own misconduct. (2) Marks and record meet requirements for an honorable discharge as outlined in class A. If first enlistment, double weight to be given to marks for latter half of service.
Good.....	(1) Same as (1) above. (2) Marks and record do not meet the requirements for an honorable discharge.
Good.....	(1) Discharged as result of approved board of medical survey for physical or mental disability the result of own misconduct.

(3) CLASS C.—DISCHARGES BY SPECIAL ORDER OF THE BUREAU OF NAVIGATION

Cause	Character of service	Conditions
For man's own convenience at own request.	Good.....	(1) Discharged prior to expiration of enlistment for own convenience at own request. (2) Average of marks as computed in class A, not less than 2.5 in proficiency in rating and 2.75 in conduct.
	Indifferent.	(1) Same as (1) next preceding. (2) Average of marks less than 2.5 in proficiency in rating or 2.75 in conduct.
At request of surviving dependent.	Good.....	(1) Discharged prior to expiration of enlistment at request of surviving dependent. (2) Average of marks, as computed in class A, not less than 2.5 in proficiency in rating and 2.75 in conduct.
	Indifferent.	(1) Same as (1) in preceding. (2) Average of marks less than 2.5 in proficiency in rating or 2.75 in conduct.
For fraudulent underage enlistment.	Good.....	(1) Discharged at request of parent or guardian prior to expiration of enlistment for fraudulent underage enlistment, if true date of birth was concealed or not given and consent of parent or guardian was not first obtained. (2) If over 18 years when enlisted, application must reach the Navy Department within 60 days from date sworn in. (3) Is recommended for reenlistment on becoming of legal age.
	Indifferent.	(1) Same as (1) next preceding. (2) Same as (2) next preceding. (3) Is not considered desirable material for the Navy and is not recommended for reenlistment on becoming of age.

(4) CLASS D.—DISCHARGES FOR INAPTITUDE

Character of service	Conditions
Good.....	(1) General qualifications such as not to warrant further retention in the service; no reflection on the moral character of the man; does not leave the service under dishonorable conditions. (2) Average of marks as computed in class A not less than 2.5 in proficiency in rating and not less than 2.75 in conduct.
Indifferent.....	(1) Same as (1) next preceding. (2) Average of marks less than 2.5 in proficiency in rating or 2.75 in conduct.

(5) CLASS E.—DISCHARGES BY REASON OF UNDESIRABILITY

Cause	Conditions
Fraudulent underage enlistment.	Discharged by authority of the Bureau of Navigation for fraudulent enlistment (including discharges because of underage enlistment not at request of parent or guardian where the conditions are such as to warrant an undesirable discharge).
Desertion without trial.	Discharged by authority of the Bureau of Navigation because of desertion without being brought to trial for that offense.
Trial and conviction by civil authorities.	Discharge by authority of the Bureau of Navigation because of trial and conviction by civil authorities.
Unfitness.....	Discharged by authority of the Bureau of Navigation, or by authority of commanding officer, because unfitted for further retention in the naval service.

(6) CLASS F.—DISCHARGES IN ACCORDANCE WITH SENTENCES OF COURT-MARTIAL

Character of discharge	Conditions
Dishonorable.....	Discharged in accordance with the approved sentence of a general court-martial.
Bad conduct.....	Discharged in accordance with the approved sentence of a general or summary court-martial.

PROFICIENCY IN RATING AND CONDUCT, MARKS FOR

The importance of having high marks in proficiency in rating and conduct is apparent from a study of the types of discharges. The following will show you how marks are assigned you in these two important subjects:

(a) FOR PETTY OFFICERS

Marks	Proficiency in rating	Conduct
4.0	Competent, thoroughly reliable, attentive, energetic, forceful. Not less than 3.5 in conduct.	No offenses; exemplary in conduct, bearing, and uniform; good influence on the ship.
3.5	Competent, distinctly above the average; has qualities sufficient to justify advancement. Not less than 3.5 in conduct.	Conduct positively good; no leave-breaking offense; not more than one minor offense either in sobriety or of other nature.
3.0	Competent; reliable in his rating. Not less than 3 in conduct.	Minor offenses only, including leave breaking less than 3 hours.
2.5	Sufficiently good to justify retention in rating. Not less than 2.5 in conduct.	Minor offenses only, including repeated minor leave breaking or leave breaking more than 3 hours.
2.0	Sufficiently good to retain in rating only if there is shown immediate and decided improvement and has 3 or better in conduct.	More serious offenses either in sobriety or of other nature.
1.5	Unfit for further retention in present petty-officer rating.	Unreliable as petty officer on account of nature of offense.
1.0	Unfit for any petty-officer rating for any cause.	Unreliable as petty officer on account of nature of offenses.

(b) NONRATED MEN

Marks	Proficiency in rating	Conduct
4.0	Competent and reliable in rating. Not less than 3.5 in conduct.	No offenses; exemplary in bearing and uniform.
3.5	Competent; distinctly above the average; qualities sufficient to justify advancement.	No leave breaking; minor offenses only; not more than one offense in sobriety.
3.0	Competent; reliable in rating; satisfactory in conduct.	Satisfactory; no repeated leave breaking; not more than one offense in sobriety.
2.5	Sufficiently good to justify retention in rating.	Satisfactory.
2.0	Sufficiently good to retain in rating if improvement is shown.	More serious offenses either in sobriety or of other nature.
1.5	Unfit for retention in present rating.	Unreliable for any cause.
1.0	Unfit for rating for any cause.	Serious offenses.

SUMMARY OF MARKS

(a) To be recommended for honorable discharge:		
(1) Proficiency in rating-----		2.75
(2) Conduct-----		3.0
(b) To be recommended for reenlistment:		
(1) Proficiency in rating-----		2.5
(2) Conduct-----		2.75
(c) To be recommended for good-conduct medal:		
(1) Proficiency in rating-----		3.5
(2) Conduct-----		4.0

The marks indicated above in conduct and proficiency in rating should not be exceeded in the following conditions:

	Proficiency	Conduct
(a) Punishment of confinement by commanding officer-----		1.5
(b) Sentence by summary court, except for incompetency-----		1.0
(c) Sentence by deck court if more than 10 days' loss of pay--		1.5
(d) Reduction in rating, except for incompetency-----		2.5
(e) Offense of leaving ship or duty without authority-----	3.0	0
(f) Smuggling or attempting to smuggle, liquor or under influence of liquor or drugs, not having been on liberty--	3.0	0

ADVANTAGE OF HONORABLE DISCHARGE

An honorable discharge is a testimonial of fidelity and obedience awarded men discharged after a complete enlistment, whose mark and conduct warrant such a discharge. This discharge will be of immense value to you in seeking positions in civil life. It opens all the advantages of the Navy to you in case you decide to remain in the naval service.

TRANSPORTATION AFTER DISCHARGE

In general an enlisted man discharged from the Navy, except by way of punishment for an offense or

by special order for his own convenience, receives 5 cents per mile for the distance from the place of his discharge to the place of his acceptance for enlistment.

The following table is a guide:

Discharge	Cause	Payment
Honorable.....	Expiration of enlistment.....	Yes.
Do.....	Medical survey.....	Yes.
Ordinary.....	Expiration of enlistment.....	Yes.
Do.....	Medical survey.....	Yes.
Special order of bureau.....	Request of man.....	No.
Do.....	Request of surviving dependent.....	Yes.
Do.....	Fraudulent underage enlistment (over 18 at discharge).....	No.
Do.....	Fraudulent underage enlistment (under 18 at discharge).....	Special.
Inaptitude.....	Inaptitude.....	Yes.
Undesirable.....	Fraudulent underage enlistment.....	No.
Do.....	Fraudulent enlistment.....	No.
Do.....	Desertion without trial.....	No.
Do.....	Trial and conviction by civil authorities.....	No.
Do.....	Unfitness.....	Yes.
Bad conduct.....	Sentence of court-martial.....	No.
Dishonorable.....	do.....	No.

Travel allowance is paid on the first extension of an enlistment at the effective date thereof, but not after any subsequent extension of the same enlistment. Travel allowance is again payable on final discharge.

SERVICE RECORDS

The service records are kept by the executive officer and are carefully safeguarded in order that unauthorized persons may not have access to them. Entries in service records are made under the direction of the commanding officer and executive officer and signed by either of these two officers. All marks are put in the record at the end of each quarter or at the date of occurrence. No erasure, interlineations, or ditto marks

are used. Errors are lined with red ink and initialed by the commanding or executive officer. All correspondence with regard to a man, reports of examining boards, etc., are put in the service record. All transfers, ratings, punishments, and commendable acts are entered in the record. The record follows the man throughout his naval career. The record is forwarded to the Bureau of Navigation when it is closed out due to cancellation, discharge, desertion, death, retirement, transfer to Naval Reserve, or when transferred to a civil hospital within the continental limits of the United States.

OVERSTAYING LIBERTY AND ITS EFFECT ON ADVANCEMENT

You have seen how your mark in conduct is reduced by the offense of overstaying liberty.

Unauthorized absence. This is the most frequent offense committed by an enlisted man. It takes numerous forms, varying in degrees from the man who is delayed in returning to the ship by reason of a blockade in traffic, or one who is not called in the morning, to the man who deliberately remains out for months or years. It is such a common offense that some enlisted men do not regard it as a serious breach of discipline, and when they are severely punished they feel that they have been unfairly treated. The fact that a man deliberately overstays his leave is, of course, a serious military offense, regardless of his reasons for overstaying, and this fact must be clearly understood. Overstaying leave accidentally, which, despite the accident, involves neglect on your part—such, for example, as oversleeping—is an offense, but it is not serious, provided you get back as quickly as possible after you wake up. Overstaying

leave deliberately for any reason whatever is a very serious offense, because it defies the authority placed over you. For example, suppose you have orders to return at 8 a. m. If at 8 a. m. you deliberately fail to return, whether it is because of business or sickness, you practically say: "I know I am ordered to be back, but I will stay as long as I wish, and then let them punish me." In this manner, you are deliberately disobeying an order, and this is a military offense of the most serious nature. So many excuses are given for this offense that it may be well to consider some of them.

(1) Some men give as an excuse that they were intoxicated at 8 a. m. and stayed on shore to sober up. It is unnecessary to say that there is never any excuse for being intoxicated; but if by any chance you should feel intoxicated or in need of sleep when your liberty is up, remember that the ship is the best place for you. If you return to the ship in such a condition and raise no disturbance, your offense is much less serious than it would be had you overstayed your leave; consequently your punishment will be much lighter.

(2) Men sometimes state that they were sick and bring the certificate of some unknown doctor. If you really are too sick to return, that is, of course, an excuse, but the doctor's certificate does not prove the fact—there are too many quack doctors. Therefore, if you are sick, telephone or telegraph the ship, giving your address, and request medical attendance. If, instead of doing this, you take affairs in your own hands, it is doubtful if your certificate will be credited, and it is very probable that you will be punished for being over time.

(3) Sickness of the family is sometimes used as an excuse, but this is not a valid excuse unless you have communicated with the ship. You always have time to

telephone or telegraph. If you do this before your leave has expired, it creates a presumption in your favor, especially if you have a clear record, as it gives the ship's authorities a chance to investigate and give you necessary instructions. It shows that you desire to comply with regulations.

(4) Sometimes mothers or other members of the family persuade men to overstay, and they sometimes appear as witnesses before a court. Remember always that this is never an excuse. You are under oath to obey the regulations of the Navy, and no one can relieve you of that oath. Your punishment is just as serious if you remain away at the request of your mother as it would be had you remained away of your own accord.

(5) Men sometimes give as an excuse that they were held by the civil authorities. The law on this subject is that if men are tried and acquitted by civil authorities they are not to blame and no punishment is assigned for the absence due to their being thus held, provided they were in the custody of the civil authorities before leave expired. But if they are held by the civil authorities and found guilty of some misconduct, they have been held by reason of their own misconduct, and hence on their return to the ship they will be punished for overstaying their leave.

(6) It frequently happens that men overstay their leave just before a ship sails, miss their ship, and give themselves up to another ship. In this case they are punished for missing ship, and in addition they lose pay and receive punishment for the entire time they are absent from naval control. This punishment is given because a man's duty is on the ship to which he is assigned; there is where he is needed, and during his absence other people must do his duty. If their ship

is sailing from the United States, they are immediately declared deserters. Therefore, if your ship sails, the best thing you can do is to report on board as soon as possible. If this can not be done, report at nearest ship or station immediately.

(7) There is one feature about absence over leave that shows up in a very large number of courts-martial. A man gets out of money, or oversleeps, or for one reason or another finds himself over time. Then, thinking that he will be punished anyway, he does not return immediately. This is the worst mistake you can make. Always return just as soon as possible. The sooner you get back the easier will be your punishment and the more likely will the officers be to accept your excuse. Officers always try to help a man who seems to be trying to help himself. It is the deliberate acts which are punished severely, and the longer you persist in remaining outside the more severe your punishment will be. Never remain outside a minute because you feel that you will be punished anyhow. The longer you remain out the more severe your punishment becomes.

DESERTION, PUNISHMENT FOR, ETC.

(a) Desertion consists in absence from station and duty with the intent to leave the service permanently. A man is guilty of desertion if at any time during his absence he has the intention of quitting the service permanently. Many facts serve to indicate such intent—for example, the disposal of uniform, going outside and establishing oneself and failing to make an attempt to return. Much the same excuses are given to courts as in the case of absence over leave.

(b) Few men realize how frequently deserters are captured. A large per cent of the men who desert are

either captured or voluntarily surrender. Many times deserters are captured by the civil police (who keep up with all deserters) after they have married and have families. Frequently they are captured several years after their desertion and after the men think it perfectly safe to return to their homes. The civil police are all over the United States, and many of them live on the rewards received by apprehending deserters. They keep a list of deserters, their home addresses, have copies of their finger prints, and other facts that assist in the recovery of deserters.

(c) Likewise there are few enlisted men who realize the effect of desertion. If men could but read the appealing letters from mothers, wives, and sweethearts concerning those men who have been taken from them because of desertion, no one would ever desert. These letters tell the chagrin of having a son or a husband in prison and often of a destitute condition due to the fact that he loses all pay. Hundreds of such letters are received by the Navy Department every month. Often these letters tell how good a son, or a brother, or a husband the man made, but they rarely, if ever, do any good, for the simple reason that the department is punishing the man for a certain specific act (deserting) which he committed, and all his goodness to his family does not remove from his record this violation of the law. Not infrequently it happens that his imprisonment is as much a punishment to his family as to himself, but he brought it on and has himself to blame. This is written in the hope that, before deserting, before allowing your family or your sweetheart to persuade you to remain at home, you will give a thought to this side of the question.

(d) There are several things to remember about desertion and absence overleave.

(1) It is always better to surrender than to be arrested and brought back.

(2) It is better to surrender in uniform than in civilian clothes.

(3) The sooner you surrender the better. The less time you remain out the better off you will be.

(4) There is never any excuse for an unauthorized absence of over 24 hours without communicating with the ship.

(5) There is never any excuse for desertion that can be accepted by any court.

(6) Finally, when you are in prison your family and dependents suffer as much as you do, often more, for while you are in prison you are at least fed.

(e) The following is taken from a deserter's statement:

"I deserted on account of my sister being sick. I could not get liberty, and I ran away from the ship and went to see my sister. I did not intend to desert, and would like to be restored to duty."

This is an actual case, and it is typical of a very large number of statements. In this case the sentence was 18 months in prison. If the man had behaved and had a clear record, and if his sister had really been sick enough to necessitate his presence, he probably could have obtained the desired permission. The question arises whether the pleasure of remaining at home was worth the punishment of one and a half years in prison on reduced fare, at hard labor, and with loss of all pay during that time.

TYPES OF NAVAL COURTS-MARTIAL

There are three types of courts-martial in our Navy—namely, deck court, summary court-martial, and general court-martial.

(a) **Deck court.**—This court consists of one officer and is convened by the commanding officer when he thinks the offense demands a punishment more severe than he is authorized to assign. A man may object to being tried by a deck court, and in this case he is assigned a summary court-martial. A deck court can assign the same punishments as a summary court-martial, except that in no case can a deck court adjudge discharge from the service or adjudge confinement or forfeiture of pay for a longer period than 20 days.

(b) **Summary court-martial.**—This court consists of three officers as members and one officer as recorder. It is convened by the commanding officer for offenses which demand a punishment more severe than can be given by a deck court. A summary court-martial can assign any one of the following punishments:

(1) Discharge from the service with bad-conduct discharge; but the sentence shall not be carried into effect in a foreign country.

(2) Solitary confinement, not exceeding 30 days, on bread and water or on diminished rations.

(3) Solitary confinement not exceeding 30 days.

(4) Confinement not exceeding two months.

(5) Reduction to next inferior rating.

(6) Deprivation of liberty on shore on foreign station.

(7) Extra police duties and loss of pay not to exceed three months may be added to any of the above punishments.

(c) **General court-martial.**—This court consists of not more than 13 nor less than 5 officers as members and one officer as judge advocate. It is convened by the President, the Secretary of the Navy, the commander of a fleet or squadron, or the commanding officer of any naval station beyond the continental limits of the

United States. A general court-martial can assign any punishment including the death penalty.

PUNISHMENTS BY THE COMMANDING OFFICER

For minor offenses which do not warrant one of the three courts-martial the commanding officer will punish. The regulations governing these punishments are as follows:

- (1) Reduction of any rating established by himself
- (2) Confinement, not exceeding 10 days unless further confinement be necessary in the case of a prisoner to be tried by court-martial. The use of irons, single or double, is abolished except for the safe custody or when imposed as part of a sentence by general court-martial.
- (3) Solitary confinement on bread and water, not exceeding five days.
- (4) Deprivation of liberty on shore.
- (5) Solitary confinement not exceeding seven days.
- (6) Extra duties.

CHAPTER 21

SUBJECT D.—PAY AND ACCOUNTS—GENERAL INFORMATION ON STORES TITLES

PAY GRADES

The following is the distribution of all ratings to the eight pay grades in our Navy:

Grade	Pay per month	Class or rating
1	\$126. 00	Chief petty officers (permanent).
1-A	99. 00	Chief petty officers (acting).
2	84. 00	Petty officers, first class; officers' stewards and cooks, first class; musicians, first class (Naval Academy band).
3	72. 00	Petty officers, second class; officers' stewards and cooks, second class; musicians, first class.
4	60. 00	Petty officers, third class; firemen, first class; officers' stewards and cooks, third class; musicians, second class (Naval Academy band).
5	54. 00	Nonrated men, first class (except firemen, first class, and musicians, first class); firemen, second class; musicians, second class; mess attendants, first class.
6	36. 00	Nonrated men, second class (except firemen, second class, and musicians, second class); firemen, third class; mess attendants, second class.
7	21. 00	Nonrated men, third class (except firemen, third class); mess attendants, third class.

ADDITIONS TO PAY—EXTRA ALLOWANCES

In addition to the base pay shown in the table in the previous paragraph men receive further increases in pay as follows:

(a) For length of service the base pay is increased 0 per cent after the first four years of service and 5 per

cent additional for each four years service thereafter, the total not to exceed 25 per cent.

(b) For awards of the medal of honor, distinguished service medal, or Navy Cross, \$2 per month is added to the pay, beginning at the time of winning the medal and lasting during the service of the man.

(c) Other additions to pay are—

Crews' messmen-----	\$5 per month.
Gun captains-----	\$1 to \$5 per month.
Gun range-finder operators-----	\$5 per month.
Gun pointers-----	\$1 to \$5 per month.
Sharp shooters-----	\$1 per month.
Expert riflemen-----	\$3 per month.
Mail clerks-----	\$10 to \$30 per month.
Divers-----	\$1.20 per hour.
Submarine crews-----	\$5 per month.

Qualified men for submarines get \$1 additional pay each day on which they shall have submerged in a submarine while under way, but this additional pay can not exceed \$15 per month.

Men who are designated as naval aviation pilots and detailed to duty involving flying, when indorsement to that effect is made upon their records, receive 50 per cent of their pay when under flight orders.

Men who qualify may have their ratings changed to chief aviation pilot or aviation pilot first class and receive the pay of such ratings plus 50 per cent of their pay while engaged in duty involving flying under flight orders.

ENLISTMENT ALLOWANCE ON REENLISTMENT

An enlistment allowance is paid to enlisted men (including members of the insular force) who have been discharged under honorable conditions and who reenlist within three months from the date of such discharge (reenlistments under continuous service).

The enlistment allowance is computed as follows:

(a) A man whose pay falls within the first, second, or third pay grades shall receive \$50 for each full year served in the enlistment from which he was last discharged, but the total shall not exceed \$300.

(b) A man whose pay falls within the fourth, fifth, sixth, or seventh pay grades shall receive \$25 for each year served in the enlistment period from which he was last discharged, but the total shall not exceed \$150.

Time served is computed by deducting from the time intervening between date of enlistment and date of discharge time lost due to:

(a) Absence over leave or without leave.

(b) Sickness, disease, or injury resulting from his own intemperate use of drugs or alcoholic liquors or other misconduct.

(c) Furlough without pay.

(d) Nonperformance of duty because imprisoned both while awaiting trial resulting in court-martial sentence and while serving said sentence.

When reenlistment follows an enlistment which has been extended for two, three, or four years or for an aggregate of two, three, or four years, the extension or extensions shall be considered to be the enlistment period from which the man was last discharged. As an illustration: A man in the first pay grade extends his enlistment for two years. He then extends it for one more year, and at the expiration of this last extension is discharged under honorable conditions. Upon reenlistment within three months he is entitled to three times \$50, or \$150, because of his previous extensions that total three years.

ACCOUNTS—MONTHLY MONEY

The pay accounts are kept by an officer of the supply corps who is known as the disbursing officer. He assigns each man a pay number. The commanding officer gives the disbursing officer orders to pay any extra allowance, such as for gun captain, mess cook, etc. When small stores are drawn, the original slip, with the amount purchased, goes to the disbursing officer, and this amount is subtracted from the man's pay. A copy of this slip is given to the man when he draws the clothing. To protect himself the man must insist that the amount of each item be filled in on both copies of the receipt and the total entered at the bottom. A sum of 20 cents is also subtracted each month from everyone in the Navy for hospital expenses. The men draw their pay twice per month, on the 5th and 20th.

GENERAL REMARKS ON PAY

Men must remember that their pay, except what is necessary to clothe them, is nearly all clear money. They have many allowances in addition to their pay. Their ration is quite sufficient to feed them. They have no board bill to pay. If they are sick they get medical attendance free. In case of serious illness they are sent to a hospital and cared for by the Government. If they are injured in line of duty they get a pension. They would get no such allowance in civil life.

Enlisted men, with the approval of the captain, are permitted to make an allotment of a part of their pay to their dependents or to a savings account. The paymaster makes out the allotment, and it is paid monthly from the Navy Allotment Office, Washington, D. C.

The paymaster of a ship will receive deposits of money or valuables at the risk of the owners and keep them in a safe. Every precaution will be taken for the safe-keeping of such deposits.

Men may deposit money with the paymaster in sums not less than \$5 and receive interest thereon from the Government at the rate of 4 per cent per annum. Each depositor is furnished with a deposit book, which for safety is kept by the commanding officer until the man leaves the ship. These books are then transferred with the man to the ship to which he is transferred, but the book belongs to him at all times. This is an excellent way for a man to save money. Deposits may not be withdrawn until a man is discharged.

Each man is advised to keep his own record of his account with the paymaster. Each man knows what pay he draws per month and what extra allowances he receives. Keep strict account of all you receive from the paymaster during the quarter, and the difference between this and your pay for the quarter is what is due you.

Men should ask for a special money requisition only under the most urgent necessity.

LOSS OF PAY DUE TO BREAKING LIBERTY

A man receives no pay for the period that he is absent overleave or without leave. In addition to this, he is punished for the offense, and this punishment, if by a deck or summary court, usually consists of loss of pay. For a serious case of this offense, a summary court can give a fine of three months' loss of pay.

EXAMPLE OF CHIEF PETTY OFFICER'S PAY

The following is an example of chief petty officers' pay without any extra allowances:

Grade	Base pay first 4 years' service	Base pay plus 10 per cent second 4 years' service	Base pay plus 15 per cent third 4 years' service	Base pay plus 20 per cent fourth 4 years' service	Base pay plus 25 per cent after 16 years' service
Chief petty officers with permanent appointments.....	\$126.00	\$138.60	\$144.90	\$151.20	\$157.50
Chief petty officers with acting appointments.....	99.00	108.90	113.85	118.80	123.75

TIME NOT SERVED AND TIME LOST DUE TO MISCONDUCT

Time served in any enlistment is computed by deducting from the time intervening between the dates of enlistment and discharge, all time lost due to—

(1) Absence overleave or without leave (including desertion).

(2) Sickness, disease, or injury resulting from his own intemperate use of drugs or alcoholic liquors or other misconduct.

(3) Absence while in civil arrest resulting in sentence and while serving such sentence.

(4) Furlough without pay.

(5) Nonperformance of duty because of imprisonment both while awaiting trial resulting in court-martial sentence and while serving said sentence.

GENERAL INFORMATION ON STORES TITLES

Most men have but a hazy idea of what is meant by Title A, Title B, etc., and what their responsibilities in

regard to them are. The following paragraphs will explain the meaning of these titles and give information which will assist men in taking proper care of articles and stores placed in their custody.

All expenditures of the Navy are reported to the Bureau of Supplies and Accounts by titles. The following is a list of titles which concern men on board ship:

(1) **Title A.**—First cost of ships (hull, machinery, and permanent fittings). Title A articles on board ship, therefore, are the hull, machinery, and all permanent fittings.

(2) **Title B.**—Ships' equipage, or articles which make the ship manageable, habitable, and serviceable as a naval vessel, as guns, furniture, special tools, etc.

(3) **Title C.**—Operating expense. This includes pay of officers and crew, value of rations, stationery, paints, coal, oil, ammunition used in target practice, and other expenses incidental to the maintenance of the vessels in commission.

(4) **Title D.**—All repairs to ships—that is, repair to Title A articles—are charged under Title D.

(5) **Title K.**—Changes and alterations to ships.

(6) **Title P.**—All repairs to Title B are charged as Title P.

(7) **Title X.**—These are stores carried by the supply officer, and when issued such stores become Title C.

SHIP'S ALLOTMENTS

Ships are assigned allotments of a certain amount of money each quarter for use in the upkeep, repair, and operation of the ship. Each department on board is assigned an allotment usually administered by the head of that department on the ship. (Assigning lump-

sum allotments for use of all departments on small ships has been discontinued.) Each department or ship must not exceed this allotment except in an emergency. This allotment is expended under Titles B, C, D, K, and P. As an example, the engineer officer of a battleship has an allotment for the quarter of \$10,000. He draws out 200 gallons of lubricating oil on a Title C requisition. He draws out a special Title B wrench to replace one broken and surveyed on a Title B requisition. He draws out some steel plating to repair a bulkhead or Title A article, and this is charged to Title D. He draws out some wire to repair a spare Title B armature, and this is charged to Title P. He draws out piping to use in an alteration of some steam leads. This is charged to Title K, if authorized by the Navy Department.

It is the duty of everyone to prevent waste of Title C materials. It is also the duty of everyone to care for the Title B equipment which is necessarily found in every part of the ship. This equipment is in the custody of certain men, and they will be held responsible in case of loss, but all hands must lend their aid to see that this equipment is not carelessly misplaced by them. Broken Title B articles should be saved and turned into store, when another article to replace it will be issued by the supply officer.

Title B articles must be inventoried annually. The heads of departments usually require all men under them who hold Title B custody receipts to account for them more frequently. The supply officer has a list of all Title B articles in use made out for each department on the ship, and the head of that department has to sign a custody receipt for these articles. The head of department then requires his division officers and cer-

tain other men to sign a custody receipt to him for all equipage belonging to his department which is assigned to them. The division officer then divides these articles among his section leaders or men in charge of parts of his division and requires them to account to him for them. Men who sign these custody receipts must realize that they are responsible for these articles and must check up on them frequently. If one of these men can not account for them, he must report the fact immediately to his division officer. Failure to do this is a serious offense.

Lost or missing **Title B** articles are surveyed as soon as possible by an officer appointed by the commanding officer if the value of any one article does not exceed \$100 or the total of identical articles does not exceed \$100, and by a board of three officers if values are greater. These survey boards make a most searching and exhaustive investigation of the circumstances and in every case fix the responsibility for the loss. In case the loss is due to carelessness on the part of any person, the commanding officer will assign punishment as the case demands. Surveying officers do not hold men responsible for loss due to stress of weather or casualties if witnesses can be found to prove what was the cause of loss; and a great deal of trouble is avoided if the survey is held before the facts are forgotten.

Surveys of **Title B** articles broken or worn out in use are similar except that the article must be kept for inspection by the surveying officer, and the survey is ordinarily held at a navy yard by navy-yard officer.

CHAPTER 22

SUBJECT E.—NAVAL CUSTOMS; NAVAL ORGANIZATION

RULES REGARDING SALUTES

1. Salutes.—Nothing gives a better indication of the state of discipline than the observance of the forms of military courtesy.

2. From time immemorial the salute has been a form of military courtesy that has been strictly and conscientiously observed by men of every nationality who follow the profession of arms.

3. In falling in with ships of foreign ports the national salute of 21 guns is fired and in turn answered by the foreign ships or batteries.

4. In regard to personal salutes, a junior always salutes a senior. An enlisted man salutes an officer, and the very officer saluted is called to account if he fails to salute another officer, his senior.

5. Enlisted men are often lax in the matter of saluting. This laxity is usually due to ignorance of how to salute properly or to uncertainty as to when the salute is required.

6. If uncertainty exists in regard to the necessity for saluting, the only rule to follow is to render the salute. It is far better to salute, even if in doubt as to the necessity for so doing, than to expose yourself to the chance of censure and reprimand and to be thought ignorant of the rules of one of the most essential and elementary requirements of your profession.

7. Unfortunately there are some men who deliberately fail to salute an officer, and then when called to account rely upon giving some babyish excuse about their not having seen him or something equally foolish and untrue. By observing the petty officers and seamen, recruits will learn that the higher a man's rating the better he realizes the necessity for saluting and the more pride he takes in rendering the salute properly.

PROPER FORM OF SALUTE

How to render the salute properly and the few simple rules regarding salutes should be among the first things learned by a recruit.

POSITION OF ATTENTION

1. Heels on the same line and as near each other as the conformation of the man permits.
2. Feet turned out equally and forming with each other an angle of about 45° .
3. Knees straight without stiffness.
4. Body erect on the hips, inclined a little forward; shoulders square and falling equally.
5. Arms and hands hanging naturally, back of the hands outward; thumbs along the seam of the trousers; elbow near the body.
6. Head erect and square to the front, chin slightly drawn in without constraint, eyes straight to the front. Study Figures 74*a* and 74*c* and practice standing in this position.

HAND SALUTE

(*a*) Raise the right hand smartly until the tip of forefinger touches the lower part of the headress above the right eye, thumb and fingers extended and



a. Front—Correct b. Front—Incorrect c. Side—Correct d. Side—Incorrect

FIG. 74.—Position of attention

joined, palm to the left, forearm inclined at about 45° , and wrist straight.

(b) The salute being returned, or the officer passed and the salute unobserved, drop the hand quickly to the side.

(c) When passing or being passed by an officer, the salute should be rendered at 6 paces before passing, unless the nearest point reached be greater than 6 paces and not more than 30 paces, in which case salute at the point nearest the officer. Always turn head and look the officer saluted squarely in the eye. Study Figures 75a-c and practice this salute.

RULES FOR SALUTING OFFICERS

1. All officers and enlisted men salute the captain and all officers senior to the captain on every occasion of meeting, passing near, or being addressed by them.

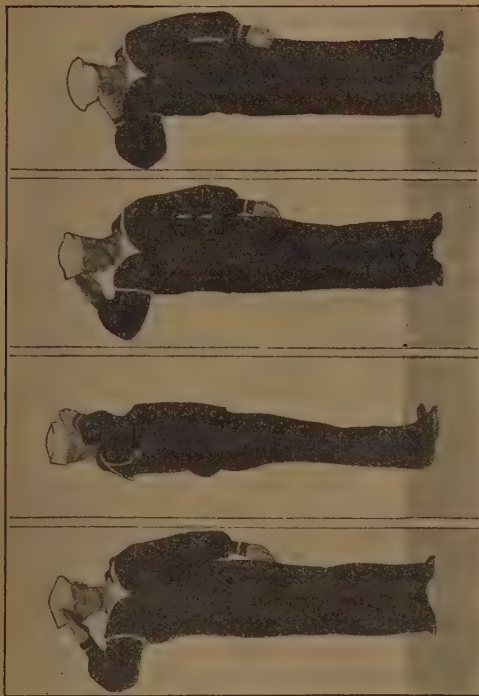
2. On board ship enlisted men salute all officers junior to the captain on their first daily meeting or passing near, and whenever addressed by them or addressing them. At other times they clear the gangway and stand at attention facing the officer until he has passed.

3. All men salute the executive officer or other officer when he is making an inspection. At other times they clear the gangway and stand at attention facing the officer until he has passed.

4. Men actually engaged in work salute only when addressed by an officer or called to attention.

5. When in military or divisional formation, men do not salute when addressed by an officer, but, if at rest, they come to attention.

6. Men who are seated at work, at games, or at mess are not required to rise when an officer, other than the



a. Front—Correct b. Side—Correct c. Saluting person to the right d. Common errors

FIG. 75.—Hard salute

captain or the admiral, passes, except when they are called to attention or when it is necessary for them to arise in order to clear a gangway.

7. Enlisted men who are passengers in a boat rise and salute when an officer enters the boat, unless awnings are spread, in which case the salute is made without rising.

8. In a boat, at a landing, or at the boom men seated and not at the oars, rise and salute whenever a boat with an officer in it comes near. If awnings are spread, they salute without rising.

9. All salutes in passing or approaching are begun first by the junior at 6 paces distance or at 6 paces from the nearest point of passing. No salutes, except as otherwise prescribed, are made at a greater distance than 30 paces.

10. Officers in civilian dress are saluted in the same manner as when in uniform.

11. When an officer enters the room where there are enlisted men, "Attention" is called by some one who perceives him; then all rise, remain standing at attention, uncovered, preserving silence, until the officer leaves the room. If at meal, they will not rise.

12. An enlisted man being seated and without particular occupation rises on the approach of an officer, faces toward him and salutes. If standing, he faces toward the officer for the same purpose. If the parties remain in the same place or on the same ground, such compliments need not be repeated. If actually at work, men do not cease their occupation to salute an officer unless addressed by him.

13. Men at all times and in all situations pay the same compliments to officers of the Army, Navy, Coast Guard, and Marine Corps, to officers of the Naval

Reserve and Naval Militia, and to officers of foreign services, as they do to the officers of the ship or command to which they belong.

14. The bugle call **Attention** is a signal for every man on board ship to stand at attention and face the person for whom "Attention" is sounded, if he can be seen; otherwise, stand at attention, facing outboard. However, men inside the ship on covered decks, if not in sight through gun ports or other openings, are not required to obey the bugle call, but they must keep silence until **Carry on** is sounded.

15. Men working over the ship's side come to attention when the bugle sounds "Attention."

16. The command "**Gangway**" should be given by anyone who observes an officer approaching a gangway that blocks his passage. Attention is paid to extending this courtesy to civilians as well as officers. There must be no doubt but that the gangway has been properly cleared. The senior officer or the petty officer in the immediate vicinity is responsible that this is done promptly. The requirements of the command "**Attention**" are also carried out if practicable when officers are escorting visitors through their own ships. The requirements of the commands "**Attention**" and "**Gangway**" must be strictly complied with, whether the visitors are officers from other ships or civilians. If the party is not to pass on promptly, the order "**Carry on**" is given without unnecessary delay.

17. When an enlisted man receives an order from an officer, the proper reply to make is "**Aye, aye, sir.**" Never use the expressions "**Very good, sir,**" or "**Very well, sir.**"

THE STAR-SPANGLED BANNER IS OUR NATIONAL ANTHEM

Whenever the national anthem is played on board a vessel of the Navy, at a naval station, or at a place where persons belonging to the naval service are present, all officers and men not in formation:

(1) Stand at attention and face toward the music, except at colors, when they face toward the colors.

(2) If covered and in uniform, salute at the first note of the anthem and retain the position of salute until the last note of the anthem.

(3) If covered and not in uniform, uncover at the first note of the anthem and hold the headdress opposite the left shoulder until the last note of the anthem, except in inclement weather, when the headdress may be slightly raised above the head.

(4) The same marks are observed during the playing of the national anthem of any other country upon official occasions.

(5) The playing of the national anthem of the United States or of any other country as part of a medley is prohibited.

OUR NATIONAL FLAG

The flag of the United States of America consists of 13 horizontal stripes, alternate red and white, and a union of 48 stars, white, on a blue field. The number of stripes represents the original 13 States that formed the United Colonies in 1776. The number of stars in the union of the flag corresponds with the number of States in the Union. On the admission of a new State into the Union the star for that State is added to the union of the flag on the Fourth of July next after the admission of the new State.

The following ceremonies are observed at colors on board ship and stations in commission. The field music, guard of the day, and the band, if there be one, are present. At morning colors the band plays the national anthem, at the beginning of which the national ensign is started up and hoisted smartly to the peak of the truck. All officers and men face the ensign and salute as described for rendering honors to the national anthem. The guard of the day and sentries under arms come to the position of "present arms" and so remain while the national anthem is being played. If no band is available, the field music sounds the "Colors" call in place of the national anthem, and the same salute is made.

The same ceremonies are observed at sunset "colors." The ensign starts from the peak of the truck at the beginning of the national anthem. The ensign is not lowered hurriedly, nor is it allowed to touch the deck.

At naval stations the same ceremonies are observed as closely as possible.

The same honors are rendered at "colors" to foreign ensigns, except that where such honors are rendered simultaneously to our own and to foreign ensigns the honors to our own are given first, and then the honors are given to the foreign ensigns in the order of rank of the foreign ships of war present. In foreign ports the honors are given our ensign first, followed by honors to the ensign of the country whose port it is.

Each officer and man whenever reaching the quarter-deck either from a boat, from a gangway, from the shore, or from another part of the ship salutes the national ensign. This salute is distinct from the salute to the officer of the deck; the person making it stops at the top of the gangway or upon arriving on the

quarter-deck, faces the colors, and renders the salute, after which he salutes the officer of the deck. In leaving the quarter-deck the same salutes are rendered but in the reverse order.

QUARTER-DECK AND GANGWAYS

The commanding officer defines the limits of the quarter-deck. It embraces as much of the main or other appropriate deck as may be necessary for the proper conduct of official and ceremonial functions. When the quarter-deck so designated is forward, and at a considerable distance from the colors, the salute to the colors will not be rendered by officers and men except when leaving or coming on board the ship.

The starboard gangway is used by all commissioned officers and their visitors; the port gangway is used by all other persons. If the construction of the ship and other circumstances make a change in this rule expedient, the change may be made at the discretion of the commanding officer. In heavy weather the lee gangway is used by everyone.

All men must receive permission from the officer of the deck before leaving the ship. When the man's name has been checked off on the liberty list, such permission is considered to have been granted. When returning aboard ship, all men will report their return to the officer of the deck, using the form, "I report my return aboard, sir." When going aboard a ship other than the one to which he is attached a man, after saluting the colors, salutes the officer of the deck and reports, "I request your permission to come on board, sir." When about to leave this ship, the man salutes the officer of the deck and reports, "I request your permission to leave the ship, sir."

GENERAL INFORMATION ABOUT THE NAVY AND ITS RELATION TO THE GOVERNMENT

The Government, through the President and Secretary of State, and with the advice and consent of the Senate, formulates certain policies which control our relations with foreign countries. These policies would be worthless if our country were not in a position to enforce them in case of necessity. An example of one of these policies is the Monroe doctrine, which prohibits foreign governments from taking over any of the countries on this hemisphere for purposes of conquest and colonization. In several cases since this doctrine was formulated our country has had occasion to enforce it by a show of arms. The Navy's primary duty is to enforce our country's foreign policies, and in addition to protect our country from obnoxious policies of foreign countries. The strength of our Navy, its composition of ships, etc., must largely depend upon our foreign policies and the policies adopted by foreign countries. Due to our isolated position from the strong European and Asiatic countries, our Navy is naturally our first line of defense in case of aggression on their part, and is our first line of offense in case we have to enforce our policies on them. Our Navy must be ready at all times to meet any emergency which may arise. These emergencies can arise at any time and when most people least expect them. Our Navy must prepare in time of peace to enter a fight at any moment with our full strength of ships and with the personnel fully trained.

THE PRESIDENT

The President is the commander in chief of both the Army and the Navy.

THE SECRETARY OF THE NAVY

By an act of Congress, approved April 30, 1798, there was established "an executive department to be denominated the Department of the Navy," and the chief officer of that department was therein directed to be called the "Secretary of the Navy." Appointment of the Secretary is made by the President, with the advice and consent of the Senate, and he is a member of the President's Cabinet. The Secretary executes such orders as he may receive from the President relative to the procurement of naval stores and materials and the construction, armament, equipment, and employment of vessels of war, as well as all other matters connected with the Naval Establishment. He is aided in carrying out these duties by two Assistant Secretaries of the Navy, who, in their own departments, are subordinate only to the President and to the Secretary of the Navy. One of the Assistant Secretaries is for aviation. In addition the Secretary of the Navy has the following naval officers in charge of bureaus to assist him in the operation and management of the Navy:

(a) An admiral is appointed **Chief of Naval Operations.**

This officer is the senior officer in the Navy while acting as Chief of Naval Operations. Under the Secretary of the Navy, he is charged with the operations of the fleet and with the preparation and readiness of its plans for its use in war.

(b) **Bureau of Navigation.**—A rear admiral of the line in charge. Has charge under the Secretary of the Navy of orders, records, training, transportation, and education of officers and men (except for the Hospital Corps) of the Navy; enlistments of all men; organiza-

tion and administration of the reserve force; charge of the Naval Observatory, Hydrographic Office, Nautical Almanac; and supplies to ships of navigational equipment.

(c) **Bureau of Medicine and Surgery.**—A rear admiral of the Medical Corps in charge. Has charge under the Secretary of the Navy of the upkeep and operation of all hospitals and the force employed therein; physical examinations of personnel in the Navy; training, promotions, etc., of the Hospital Corps; sanitation; and supply of all medical and dental supplies to the Navy.

(d) **Judge Advocate General.**—A rear admiral of the line in charge. Has charge under the Secretary of the Navy of all matters of law.

(e) **Bureau of Construction and Repair.**—A rear admiral of the Construction Corps in charge. Has charge under the Secretary of the Navy of strength, stability, designing, building, fitting, and repairing of all parts of ships of the Navy except as pertains to the Ordnance and Engineering Bureaus.

(f) **Bureau of Ordnance.**—A rear admiral of the line in charge. Has charge under the Secretary of the Navy of the upkeep and operation of all ordnance establishments such as magazines, gun factory, torpedo stations, proving grounds, etc., manufacture of arms, armor, and explosives; and upkeep and repair of ordnance equipment aboard ship.

(g) **Bureau of Yards and Docks.**—A rear admiral of the Civil Engineer Corps in charge. Has charge under the Secretary of the Navy of the design, construction, repair, upkeep, and operation of all public works and public utilities of the Navy.

(h) **Bureau of Engineering.**—A rear admiral of the line or of engineering duty only in charge. Has charge under the Secretary of the Navy of designing, building, fitting out, and repairing of machinery used for propulsion of naval ships.

(i) **Bureau of Supplies and Accounts.**—A rear admiral of the Supply Corps in charge. Has charge under the Secretary of the Navy of the purchase, reception, storage, care, custody, transfer, shipment, issue, and accounting for all supplies and property of the Navy except medical supplies (but including their purchase) and supplies for the Marine Corps.

(j) **Major General Commandant of the Marine Corps.**—A major general of the Marine Corps in charge. Has charge under the Secretary of the Navy of the general efficiency and discipline of the Marine Corps.

(k) **Bureau of Aeronautics.**—A rear admiral of the line in charge. Has charge under the Assistant Secretary of the Navy for aviation; of the operation, purchase, design, repair, building, and fitting out of all aircraft.

THE COMMANDER IN CHIEF

The title of commander in chief is given to an officer placed in command of a fleet by order of the Navy Department. At present we have three, namely—

(a) **Commander in chief, United States Fleet**, who has command over all ships afloat except those assigned to the commanders of naval districts.

(b) **Commander in chief, United States Battle Fleet**, who has command under the commander in chief, United States Fleet, of the Battle Fleet.

(c) **Commander in chief, Asiatic Fleet**, who has command under the commander in chief, United States Fleet, of the Asiatic Fleet.

THE CAPTAIN

The captain is the officer in actual command of a Government vessel. He is a line officer, and in case of his absence or death he is succeeded by the line officer next in rank. His authority over his own ship and crew is supreme, and he is authorized by law to inflict certain punishments in every case of breach of discipline.

THE EXECUTIVE OFFICER

The executive officer is a line officer next in rank to the captain. He has entire charge, under the direction of the captain, of all matters relating to the personnel, routine, and discipline of the ship. All orders issued by him are considered as coming from the captain and will be obeyed exactly as if the captain had issued them. No one has any right to ask whether a particular order came from the captain. The executive will be obeyed, and if his orders are not approved, he alone is responsible. In case of the absence or disability of the captain, the executive officer assumes command.

FIRST LIEUTENANT

The first lieutenant has charge of upkeep and repair of all parts of the ship that come under the Bureau of Construction and Repair. He is also responsible for the cleanliness, good order, and neatness of the ship as a whole.

NAVIGATOR

The navigator is responsible for the care and good order of the steering gear, except the steering engine or motors, and of all instruments or apparatus, except

electrical, which are connected with the navigation of the ship. He is responsible under the commanding officer for the navigation of the ship.

GUNNERY OFFICER

The gunnery officer is responsible for the care, overhaul, and repair of all ordnance material. He is responsible for the stowage and care of all explosives and for the training of the personnel in safety precautions. He is responsible for the efficiency of personnel in fire control and in the operation of all guns and torpedoes.

ENGINEER OFFICER

The engineer officer is responsible for the good order, cleanliness, operation, and efficiency of the machinery for the propulsion of ship, including the electrical machinery. He is responsible for the training of the personnel in his department.

OFFICER OF THE DECK

Each division officer of the deck divisions take turns on watch as officer of the deck. The officer of the deck, under the commanding officer, is in charge of the ship and is responsible for its safety. Every officer on board, except the captain and executive, is subordinate to the officer of the deck.

Each division officer of the engineer department stands watch as engineer officer of the watch. This officer is responsible under the engineer officer for the proper performance of the engineering department.

DIVISION OFFICER

Each department on board ship is divided into one or more divisions with a division officer in charge.

Division officers are responsible for the training of the personnel under them and the care, cleanliness, and upkeep of all material assigned to their division.

OTHER OFFICERS

In addition to the officers above noted, the following officers are found on the larger ships:

(a) **Medical officer** in charge of the medical department and the care of all supplies pertaining thereto. Has charge of the care and treatment of the sick and wounded and advises the commanding officer on matters affecting the physical fitness and health of the personnel. Dental officers come under the senior medical officer on board.

(b) **Supply officer.**—Has charge of the accounts of the personnel, the purchasing of stores and material for the ship, and of the disbursement of funds in connection with the general operation of the ship. Large ships have an officer of the Supply Corps detailed as disbursing officer, who takes over all the accounts of the personnel.

(c) **Chaplain.**—Chaplains are attached to large ships. They conduct divine service, supervise instruction of those deficient in elementary subjects, and look after the moral welfare of the men.

REDRESS OF WRONGS

The regulations for the redress of wrongs are as follows:

“If a person in the Navy considers himself oppressed by his superior, or observes in him any misconduct, he shall not fail in his respectful bearing toward him, but shall represent such oppression or misconduct to the proper authority. He will be held accountable if his representations are found to be vexatious, frivolous,

or false. Any application of redress of wrong shall be made in writing through the immediate commanding officer to the commander in chief of the fleet or squadron, or to the senior officer present, and it shall be the duty of the latter to take such action in the matter as in his judgment, justice and the good of the service demand."

EXERCISE OF AUTHORITY

The regulations for the exercise of authority are as follows:

(1) "All persons in the Navy are required to obey readily and strictly and to execute promptly the lawful order of their superiors."

(2) "Superiors of every grade are forbidden to injure those under their command by tyrannical or capricious conduct or by abusive language. Authority over subordinates is to be exercised with firmness, but with justice and kindness."

These articles are of course applicable to petty officers as well as to officers.

QUARRELS AND DISTURBANCES

The regulation regarding quarrels and disturbances follow:

"In the event of a riot or quarrel between persons of the Navy, it shall be the duty of the senior line officer present to suppress the disturbance and, if necessary, to arrest those engaged in it, even though they may be his superior in rank, and all persons belonging to the Navy who may be present shall render prompt assistance and obedience to the officer thus engaged in the restoration of order. Should there be no line officer present, the senior officer of the Navy or of the Marine Corps who may be present shall exercise the same authority and be entitled to the same obedience."

CHAPTER 23

SUBJECT F.—THE GENERAL CHARACTERISTICS OF SHIPS OF THE NAVY

THE GENERAL CHARACTERISTICS OF SHIPS

THE HULL

The principal parts of the hull of a modern ship are named below, and the location of many of them are shown in the accompanying plates, giving inboard profile and two sections of a typical vessel.

(1) **The keel.**—Usually composed of the outer and inner keel plates, the vertical keel, and the main keelson, with their accompanying angle bars. At its forward end the keel is continued by the stem, which is of great strength, and at its after end by the sternpost, also very strong and arranged to carry the propellers and the rudder.

(2) To the keel are attached the frames, which extend transversely, being built up of main bars, floor plates, and reverse bars. At right angles to these frames run longitudinals, also made up of plates and angles. The frames and longitudinals are riveted together where they cross each other. Together they form the skeleton, to which is riveted the outside bottom plating. An inner bottom is fitted on large ships; this extends up to the armor shelf on battleships and to various heights on other vessels. The double bottom extends fore-and-aft to a greater or less degree, depending upon the particular type of ship. It is subdivided into small cells by water-tight frames and water-tight longitudi-

nals, so that the leakage may be reduced to a minimum if the ship's bottom is perforated by touching bottom. In some cases the frames near the bow and stern are spaced more closely than elsewhere to provide local strength, and breasthooks, ram plates, counters, and transoms are fitted for like reasons.

(3) **Bulkheads** are used to subdivide the ship's interior vertically into water-tight compartments for the preservation of buoyancy and stability; nonwater-tight bulkheads are also fitted to provide stowage and living spaces. Incidentally bulkheads provide stiffness and strength to the ship's hull.

(4) **Decks** provide shelter, working spaces, and living quarters; they subdivide the hull horizontally into a still greater number of water-tight compartments. They are important longitudinal strength members, particularly the higher decks that are continuous. Decks are generally of steel and they may or may not be covered with planking or linoleum. Weather decks of large warships are generally planked and calked, but if steel is not first laid under the wood, deck stringers and tie-plates are used. The deck beams are supported by stanchions. To secure accessibility to all parts of the ship, numerous hatches, doors, scuttles, and manholes are provided; these are water-tight when necessary, and the hatches are always fitted for battening down on upper decks.

(5) The **protective deck** is fitted on armored or protected ships and is a steel deck to protect the propelling machinery and other objects below the water line from bombs and high-angle fire.

ARMOR

(1) A water-line belt of heavy armor, varying in height on different ships, extends from well forward

of the forward group of magazines to the afterslope of the protective deck, thus protecting the ship for about three-quarters of her length. This belt varies in thickness from the top to the bottom. At the end of this belt two belts of athwartship armor of about the same thickness connects the longitudinal belts on either side.

(2) On some ships a narrow water-line belt of heavy armor extends aft to the steering gear and rudder post.

(3) The turrets revolve within and above protected spaces called barbettes, protected by armor. The barbettes extend in varying thicknesses of protection down as far as the protective deck.

(4) Conning towers are built of heavy armor; they are connected to the protective deck by armored tubes so as to prevent the system of steering and communication from being shot away.

(5) A protective deck of nickel steel or special-treatment steel, in varying thickness, extends practically the whole length of the ship and generally at a height slightly above the water line. Aft, and sometimes forward, the protective deck slopes down to the ends of the ship.

DRAINAGE SYSTEM

Water is pumped out of various compartments by means of the drainage system. As a general rule, each compartment is either connected to the pumps by piping or is arranged to drain through sluice valves into other compartments that can be pumped out. In order to remove water in large quantities from main machinery compartments, there is a large pipe called the main drain, connecting with them; in case of serious leaks both circulating pumps can be put on the main drain.

The secondary drain is a pipe of smaller diameter running on one side of the center line of the ship throughout the length of the machinery spaces; it is connected with various drainage manifolds. This entire system of piping is called the drainage system of the ship.

VENTILATION SYSTEM

The ventilation system consists of piping and fans by which fresh air is supplied to compartments below. Many fans are installed on a large ship; they force air down into large trunks, from which it is led into various compartments in smaller ducts or pipes. Each of these pipes has a small damper for turning the air on or off; the openings of these pipes are covered with wire netting, which must be kept clean and free from loose paper and dust. The ventilation system also provides for the escape of foul air from closed compartments below. Natural ventilation is provided through trunks whose upper ends are fitted with cowls or ventilators, and in some cases by wind sails. These cowls and wind sails, when trimmed to the wind, send fresh air below, forcing the foul air outboard through the hatches, ports, etc., or through exhaust cowls, which must, of course, be trimmed away from the wind. In large ships this artificial ventilation system is very extensive, but all ships, large or small, use natural ventilation a great deal, and care on the part of the men will frequently increase their comfort materially. Care should be taken to see that there is every opportunity for supply and exhaust, so that a constant circulation may be maintained, or, in the case of artificial ventilation, that the wire mesh covers are not choked and that the cowls are properly trimmed.

WATER-TIGHTNESS

Plates of the hull, bulkheads, or decks that are meant to be water-tight are closely riveted, and the seams and butts are calked, metal to metal. The planking of decks is made water-tight by filling the seams with oakum, which is driven down, or calked, and then payed with hot pitch or with marine glue or putty. Ports, hatches, water-tight doors, etc., are hinged and are made water-tight by compressing rubber gaskets between the cover frame and the frame of the plating to which they are hinged; for compressing this, dogs or clamps are used. All openings in water-tight bulkheads are similarly made water-tight. In some locations doors are arranged to slide vertically, and they become water-tight by wedging the two metal surfaces together. It is most important that all appliances for securing water-tightness be kept in an efficient condition. If not, when the emergency comes, the various water-tight compartments that have been relied on to keep the ship afloat in just such an emergency will prove that they are not water-tight, and we shall find that we have deceived ourselves into false security.

NOMENCLATURE OF DECKS

The following nomenclature of decks is followed for United States naval vessels; this nomenclature does not apply to the ships built or planned prior to November 9, 1912.

(1) The highest deck extending from stem to stern is called the main deck.

(2) A partial deck above the main deck at the bow is called the forecastle deck; at the stern, poop deck; amidships, upper deck.

(3) The name "upper deck," instead of "forecastle deck" or "poop deck," is applied to a partial deck extending from the waist to either the bow or the stern.

(4) A partial deck above the main, upper, forecastle, or poop deck and not extending to the side of the ship is called the superstructure deck.

(5) A complete deck below the main deck is called the second deck. Where there are two or more complete decks below the main deck, they are called the second deck, third deck, fourth deck, etc.

(6) A partial deck above the lowest complete deck and below the main deck is called the half deck.

(7) A partial deck below the lowest complete deck is called the platform deck. Where there are two or more partial decks below the lowest complete deck, the one immediately below the lowest complete deck is called the first platform deck, the next is called the second platform, and so on.

(8) Decks which are for protective purposes are fitted with plating of extra toughness and extra strength and thickness and are defined, for technical purposes, as protective and splinter in addition to their regular names. Where there is only one such deck, it is defined as "protective," and where there are two, that having the thicker plating is defined as protective, and that having the thinner plating is defined as "splinter," in addition to the regular names.

(9) Where a protective deck is stepped a complete deck height, the respective portions shall be distinguished by means of the terms "middle protective section" and "forward (or after) protective section" in addition to the regular names. Where a splinter deck is stepped a complete deck height, the respective portions are similarly distinguished.

(10) Where a portion of the protective or splinter deck is sloped, the sloping portion is defined as the inclined protective deck or inclined splinter deck.

BULKHEADS

Ships of the Navy are divided into numerous watertight compartments by decks and bulkheads. The bulkheads running fore and aft are called longitudinal bulkheads, and those running athwartship are called transverse bulkheads. Watertight doors are fitted in these bulkheads to allow passage from one compartment to another. In certain of the principal bulkheads below the water line no door openings are cut, as it is of vital importance that these bulkheads be watertight in case of accidental admission of water to the adjacent compartment.

NUMBERING COMPARTMENTS

The ships are divided into four sections and lettered A, B, C, and D. Section A extends from the bow to the forward fireroom bulkhead; section B from the forward fireroom bulkhead to the forward engine-room bulkhead; section C from the forward engine-room bulkhead to the after engine-room bulkhead; section D includes all the ship abaft the after engine-room bulkhead.

All numbers in each division begin at the forward end of that division.

Compartments in the deck space below the deck nearest designer's water line are numbered from 401 to 499; the next deck space below from 501 to 599, etc., for the remaining deck spaces.

Double-bottom compartments are numbered from 901 to 999.

Compartments in the deck space above the deck nearest the designer's water line are numbered from

301 to 399; the next deck above from 201 to 299; the next deck above from 101 to 199; the next deck above from 001 to 099.

Compartments with no decks extending from inner bottom or outside plating through two or more deck spaces, such as engine rooms, boiler rooms, deep peak tanks, fuel-oil tanks on recent battleships, cargo holds, etc., are numbered from 1 to 100. Boiler and engine rooms are given the lowest numbers, B-1, B-2, B-3, C-1, C-2, etc. Where there is a half deck owing to the sheer or other cause, or where there is a flat between regular decks, such as cofferdam flat over oil tank, no change in the hundreds series is made on account thereof.

The above scheme of numbering gives an indication of the vertical location of the compartments which, in connection with the divisional fore-and-aft location, give a very fair idea of the position of the compartment.

The numbering of the compartments is always prefixed with the letter indicating the general division of the ship in which it is placed, as A-21, B-3, etc.

In the old ships the double bottoms were numbered from aft forward in each section beginning with the number 99, as D-99, D-98, etc.; C-99, C-98, etc.; B-99, B-98, etc.; A-99, A-98, etc. The compartments between the double bottoms and protective deck were numbered from forward aft, beginning with 1, as A-1, A-2, etc., and the compartments above the protective deck were similarly numbered but began with 100, as A-100, A-101, etc., odd numbers on the starboard side and even numbers on the port side.

All magazines and shell rooms have the letter M placed after their number.

PEAK TANKS

Peak tanks are water-tight compartments at the extreme ends of the ship. They are generally fitted with piping and valves so that they can be filled and emptied of water. They are used in case the ship is to be trimmed either by the stern or by the bow. A heavy water-tight bulkhead abaft the forward trimming tank is usually called the collision bulkhead.

QUESTIONS

Q. How is the ship divided lengthways?

A. Into forward, midships, and after parts.

Q. Which is the bow?

A. The forward end of the ship.

Q. Which is the stern?

A. The after end of the ship.

Q. What is the part known as midships?

A. The middle part.

Q. What are the starboard and port sides?

A. The starboard side is on the right-hand side looking forward; the port side is on the left-hand side looking forward.

Q. What is the keel?

A. The lowest center line longitudinal member; it is the first piece of metal laid on the blocks when building the ship.

Q. What is the stem?

A. It is the system of framework—the vertical extension of the keel—in the forward part of the vessel to which the plating is secured forward.

Q. What is the sternpost?

A. It is the system of framework—the vertical extension of the keel in the after part of the ship—to which the plating is secured aft. If a single screw is

used, the post to which the rudder is secured is the "rudderpost" and the other the sternpost.

Q. What are the frames?

A. The frames or ribs extending transversely from the keel to form the main thwartship portion of the skeleton to which the outside plating is secured.

Q. What is the bilge?

A. The flat part of the ship's body on each side of the keel. It extends out to the turn of the bilge.

Q. What are the bilge keels?

A. Large pieces of metal secured outside near the turn of the bilge. They tend to lessen a ship's motion while rolling.

Q. What is the "counter"?

A. The portion of the stern from the water line to the overhang (or the part which projects out over the water).

Q. What is the water line?

A. It is a line the water makes along the ship's side when she is afloat.

Q. What is the run of a ship?

A. The narrowing of a hull aft between keel and counter.

Q. What is the cutwater?

A. It is the forward edge of the stem; the part that cuts the water when the ship is in motion.

Q. What is a double-bottom compartment?

A. Steel ships generally have two complete bottoms over a considerable portion of their extent—the inner and outer bottoms. The spaces between them are called "double-bottom compartments."

Q. What is a water-tight compartment?

A. All steel ships are divided into a large number of rooms and passes that are so fitted as to be water-tight. Each separate compartment is known as a

water-tight compartment. The compartments serve to keep the ship afloat by confining the water if her hull is pierced.

Q. What are the eyes of the ship?

A. The extreme forward portions of the ship, where the plating joins the stem.

Q. What are the wings?

A. The portion of the hold nearest the side of the ship.

Q. What are the chain lockers?

A. Compartments in the forward portion of the vessel under the chain pipes for carrying and storing anchor chains.

Q. What are the beams of the ship?

A. Horizontal bars of metal running across the ship to support the decks and connect the sides.

Q. What are the waterways?

A. Small gutters extending all around the edge of the weather decks. When the deck is washed down, the waterways carry off the water over the side through the scuppers, thus keeping the side clean.

Q. What are the scuppers?

A. They are holes in the waterways and in the ship's side through which water is conveyed overboard through pipes.

Q. What are partners?

A. Frames of timber or steel fitted into the decks immediately around the masts to strengthen the decks locally against side pressure of the masts.

Q. What are the ports?

A. Openings in the ship's side for various purposes. Air ports are for the admission of air and light. Gun ports are openings through which the guns are pointed and fired. Transports and supply ships have cargo ports.

Q. What are stanchions?

A. Vertical pillars of wood or metal supporting a beam or some other portion of the ship.

Q. What is calking?

A. Driving oakum between the planks of a deck. The top portion of the seam is then filled in or payed with pitch or marine glue.

Q. What is the rudder?

A. The apparatus used to steer a vessel; it hangs on the sternpost—or rudderpost—by pintles and gudgeons.

Q. What is the tiller?

A. A piece of timber or metal fitted fore and aft to the head of the rudder stock by which to turn it when steering.

Q. What is the steering wheel?

A. A framework shaped like a wheel used to move the tiller and rudder. With the steam steering gear in general use the wheel, when turned, opens the valve of the steering engine and the engine moves the rudder through a tiller or a crosshead. The wheel is connected to the valve by shafting and gearing, or by a flexible wire cable, or in some cases by a telemotor (or a hydraulic piping system).

NOTE.—In all vessels of the Navy the wheel, the rudder, and the ship's head (when moving forward) move in the same direction.

Q. What is the forecastle, the gangway (or waist), the quarter-deck?

A. In modern days these portions of the ship are not so clearly defined as they were in the old sailing ships. Generally speaking, the forecastle extends from the foremast forward on the uppermost deck. The quarter-deck extends from the mainmast to the poop

or to the stern if there is no poop. The portions of the upper deck on each side between the forecastle and the quarter-deck are known as the waist or the gangways.

NOTE.—Certain battleships have the officers' quarters forward. For this reason and on account of the necessity for ceremonial functions being conducted on the quarter-deck, it is required that the quarter-deck be defined by the captain. Consequently the Navy Regulations say: "The commanding officer shall clearly define the limits of the quarter-deck; it shall embrace so much of the main or other appropriate deck as may be necessary for the proper conduct of official and ceremonial functions."

Q. What is the topgallant forecastle; what is the poop?

A. The topgallant forecastle is a small deck sometimes found on the bows of a vessel above the spar or main deck; a poop deck is a similar deck aft. The topgallant forecastle usually extends aft to the foremast. The poop deck usually extends forward only to the mizzenmast. The topgallant forecastle and the poop decks are usually found only on sailing vessels.

Q. What is the break of the forecastle or poop?

A. The after end of the forecastle or the forward end of the poop deck.

Q. What is a hatchway?

A. An opening in the decks forming a passageway from one deck to another and into the holds.

Q. What is a coaming?

A. The raised boundary of the hatchways to keep the water from going below.

Q. What are gratings?

A. Coverings of latticework for the hatchways, waterways, bridges, etc.

Q. What are deadlights?

A. Pieces of heavy glass fixed in the deck or ship's side to admit light.

Q. What are scuttles?

A. Round or square holes cut in the deck for the passage of coal, ammunition, etc.

Q. What are the bulwarks?

A. The planking or plating around the vessel above the upper deck.

Q. What is the taffrail?

A. The rail around the vessel's stern.

Q. What is a bumpkin?

A. A short beam or metal bar projecting out from the bow or quarter of a ship; it is used to give better lead to certain gear.

Q. What are hawse pipes?

A. Pipes in the bow of a ship for anchor cables to pass through.

Q. What are hawse plugs?

A. Plugs fitted in the hawse pipes to prevent the water from coming on board through them. When made of canvas, stuffed or filled with oakum, they are called jackasses.

Q. What are bucklers?

A. Shutters fitted over an opening to confine the packing that is put in holes to keep water out. They keep hawse plugs, for example, from washing inboard.

Q. What is the manger?

A. It is the part of the deck that is partitioned off forward to prevent any water that may enter through the hawse holes from running aft over the decks.

Q. What are the chain pipes?

A. The holes for the cable where it passes from one deck to another from the chain lockers.

Q. What are the chain bitts?

A. The heavy vertical pieces of steel fitted in the fore part of the deck to which, with the assistance of deck stoppers and compressors, the cable is secured. One or two turns are taken around the bitts.

Q. What is a chain compressor?

A. The large movable iron lever fixed at the bottom of the chain pipe. A tackle is secured to its end, and by hauling on the tackle the cable is controlled as it runs out by being nipped between the compressor and the lower part of the chain pipe.

Q. What is a capstan?

A. A barrel of wood or steel turning around horizontally or vertically on a central spindle. By forcing it to turn, either by pushing on capstan bars or by steam, it serves to hoist heavy weights or to weigh anchor.

Q. What are bitts?

A. They are vertical pieces of timber or metal very securely fastened to the deck of the vessel. They are used to secure hawsers or for any purpose where heavy strains are to be taken.

Q. What is an eyebolt?

A. A bolt with an eye or opening in its head, to which a tackle may be hooked. An eyebolt having a ring welded in the eye is a ringbolt.

Q. What is a fish boom or fish davit?

A. A movable boom or davit for fishing the anchor.

Q. What is the billboard?

A. A shelf or ledge on the ship's side to support the fluke of the anchor.

Q. What are the channels or chains?

A. Platforms projecting out from the ship's side to give greater spread to lower rigging; in men-of-war, platforms where the leadsman stands to take soundings.

Q. What is a bridge?

A. A platform extending above the rail across the ship for the convenience of the officer of the deck. In ships of recent construction the bridge is a platform extending out from and surrounding the military mast.

Q. What is the sea ladder?

A. Steps secured to the ship's side for use in coming on board when the gangway is unshipped. This ladder, as the name indicates, is used chiefly at sea.

Q. What are the accommodation ladders?

A. Ladders shipped at the gangway in port for convenience in coming on board.

Q. What is a gooseneck?

A. It is the steel attachment fitted in the end of a boom securing the same and allowing it vertical and lateral motion at the same time.

Q. What are davits?

A. Outriggers projecting from the ship's side used for hoisting heavy articles or weights, such as boats or stores; also at hatches for ammunition, etc.

Q. What are hammock cloths?

A. Pieces of canvas for covering the openings to the hammock nettings.

Q. What are hammock nettings?

A. Spaces along the rail in which hammocks are stowed when not in use; in modern ships the hammock nettings are below, in the living quarters of the crew.

Q. What is the galley?

A. The cooking compartments on board ship.

Q. What is a magazine?

A. A place where powder is stowed.

Q. What is a shell room?

A. A place where shell is stowed.

Q. For what purpose are the numbers placed on the bow and on the stern?

A. To show the draft of the water at any time.

Q. How is the draft determined by these figures?

A. The bottom of each figure marks the exact number of feet from the bottom of the keel; the tops of the figures indicate the half feet. The rest is estimated by the eye. For example, the bottom of the figure 9 is exactly 9 feet from the bottom of the keel. The top of the figure 9 is exactly 9 feet 6 inches from the bottom of the keel.

Q. What are the holds, storerooms, wardroom, cabin, sick bay?

A. The term "hold" is a general term to denote the lower storage compartments of a ship. Storerooms are located in various parts of the ship; they are used for stowing the various stores. The cabin is the quarters of the captain or the admiral; wardroom, the quarters of all officers junior to the captain, except the junior officers and warrant officers, who occupy the junior officers' and warrant officers' quarters. The sick bay is the hospital of the ship.

Q. What is a composite ship?

A. It is a ship with steel frames, longitudinals, and upper works, but with the underwater body planked with wood so that it may be coppered.

Q. What is a sheathed ship?

A. It is a ship in which the hull, while completely made of steel like any other ship, has the underwater body covered with wood and coppered outside.

Q. What is the advantage of a wooden underwater body?

A. It may be coppered, with the result that the ship does not foul quickly and may remain longer out of dock.

Q. Why could not a steel hull be covered with copper plates?

A. The galvanic action caused by copper and steel in salt water would cause the hull of the vessel to corrode rapidly.

NOTE.—The few sheathed and composite ships that are in the Navy are of the gunboat or cruiser class. All the *Denver* type of cruisers, for example, are sheathed.

Q. What is nonscatterable glass?

A. One type is a single layer of glass, one face of which has received a coating of transparent elastic material. Another type has this transparent elastic material between two layers of glass.

Q. What precautions should be used with this glass?

A. Never use alcohol or solid washing compounds on the treated surface. Avoid handling the treated face with the bare hands.

Q. How are bulkheads shored up in case of damage?

A. Brace all shores with material running as nearly as practicable at right angles to the bulkhead to be supported. Do not brace one bulkhead by shoring to another unless there are supporting structures to distribute the load. Aim to shore bulkhead to a deck or vice versa. In general, the bulkhead stiffeners are the members to be braced.

Q. What are the tonnage rules?

A. There are five kinds of tonnage in use in the shipping business. They are dead-weight tonnage, cargo, gross, net, and displacement tonnages.

(a) **Dead-weight tonnage** expresses the number of tons (of 2,240 pounds) of cargo, stores, and bunker fuel that a vessel can transport. It is the difference between the number of tons of water a vessel displaces "light" and the number of tons it displaces when submerged to the load water line. Dead-weight tonnage is used interchangeably with dead-weight carrying capacity. A vessel's capacity for weight cargo is less than its total dead-weight tonnage.

(b) **Cargo tonnage** is either "weight" or "measurement." The weight ton in the United States and in British countries is the English long or gross ton of 2,240 pounds. In France and other countries having the metric system a weight ton is 2,204.6 pounds. A "measurement" ton is usually 40 cubic feet, but in some instances a larger number of cubic feet is taken for a ton. Most ocean package freight is taken at weight or measurement (W/M), ship's option.

(c) **Gross tonnage** applies to vessels, not to cargo. It is determined by dividing by 100 the contents, in cubic feet, of the vessel's closed-in spaces. A vessel ton is 100 cubic feet. The register of a vessel states both gross and net tonnage.

(d) **Net tonnage** is a vessel's gross tonnage minus deductions of space occupied by accommodations for crew, by machinery for navigation, by the engine room, and by fuel. A vessel's net tonnage expresses the space available for the accommodation of passengers and the stowage of cargo. A ton of cargo in most instances occupies less than 100 cubic feet; hence the vessel's cargo tonnage usually exceeds its net tonnage, and may in some instances exceed the gross tonnage.

(e) **Displacement** of a vessel is the weight, in tons of 2,240 pounds, of the vessel and its contents. Displace-

ment "light" is the weight of the vessel without stores, bunker fuel, or cargo. Displacement "loaded" is the weight of the vessel plus cargo, fuel, and stores.

(f) Example.—For a modern freight steamer the following relative tonnage figures would ordinarily be approximately correct:

Net tonnage	4,000
Gross tonnage	6,000
Dead-weight carrying capacity	10,000
Displacement, loaded, about	13,350

Q. What protectors are used on steel plating of hull near composition fittings to prevent pitting from electrolytic action?

A. The practice of fitting zinc protectors on the steel plating of the hulls of vessels, in the vicinity of composition sea valves and chests, composition torpedo and tube mouthpieces, on rudders, shaft tubes, and struts, and near propellers as a protective measure against electrolytic action has now been largely abandoned except in cases of destroyers and submarines.

CHAPTER 24

SUBJECT G.—GENERAL FEATURES OF SHIPS OF THE NAVY OF DIFFERENT CLASSES

CLASSIFICATION OF VESSELS IN OUR NAVY

The classification of vessels in our Navy is as follows:

(a) Battleships, first line.—All our 18 battleships now allowed us by the Washington Conference belong in this class.

(b) Cruisers, second line.—This includes the *Rochester*, *Pittsburgh*, and *St. Louis* classes of cruisers.

(c) Light cruisers, first line.—This includes the *Omaha* class and will include all new cruisers now authorized similar to *Omaha* class up to 10,000 tons displacement, such as the *Pensacola* and *Salt Lake City*.

(d) Light cruisers, second line.—This includes the *Chester* and *Denver* classes and the *Olympia*.

(e) Aircraft carrier, first line.—This includes the *Saratoga* class of carrier.

(f) Aircraft carrier, second line.—*Langley*.

(g) Mine layers, first line.—None of these are on the Navy's list at present.

(h) Mine layers, second class.—This includes the *Baltimore* and *Shawmut* classes.

(i) Destroyers, first line.—All our 1,000 and 1,200 ton destroyers.

(j) Destroyers, second line.—All our 750-ton destroyers.

(k) Submarines, first line.—Submarines of the S class.

(*l*) Submarines, second line.—Submarines of classes **H** to **R**, inclusive.

(*m*) Fleet submarines, first line.—Submarines of classes **T** and **V**.

In addition to the above there are patrol vessels, gunboat class; patrol vessels, converted yacht class; patrol vessels, submarine chaser and Eagle boat class; auxiliaries for use as tenders for destroyers, submarines, and lighter-than-air aircraft; and auxiliaries for repair ships, storeships, colliers, oilers, ammunition ships, cargo ships, transports, hospital ships, fleet tugs, mine sweepers, and miscellaneous uses.

CHARACTERISTICS OF EACH CLASS OF VESSEL IN OUR NAVY

(*a*) Battleships, first line.—Battleships are heavily armored, carry heavy armament, and are of moderate speed of about 20 knots. They are designed to fight any vessel anywhere.

The Washington Conference limits the size of battleships now to 35,000 tons displacement and to guns not over 16 inches. All battleships carry a large fuel capacity and have a large cruising radius. All battleships are heavily armored on the water line, with the heaviest armor in the vicinity of the vital parts of the ship, gradually tapering to about 3 inches at the bow and stern. In addition to this they carry heavy armor in the barbettes leading up to the turrets, heavy armor in tubes leading up to the conning and fire-control tower, and heavy armor in wake of the uptake space of smoke pipes. All turrets are heavily armored. A heavy protective deck of special steel covers the vitals of the ship. Besides this armor, battleships are protected by having double bottoms split up into numer-

ous water-tight subdivisions. Also all vital parts of the ship are divided into numerous water-tight compartments so that these parts can be flooded without seriously affecting the other parts. In the latest ships there are further subdivisions, called "blisters," for protection against torpedoes.

The general features of our battleships are as follows, only the maximum armor thickness being given:

Maryland, Colorado, and West Virginia.—All electric drive; 28,900 horsepower; speed, 21 knots; four screws; displacement, 32,600 tons; carry eight 16-inch, 45-caliber guns in four turrets; twelve 5-inch, 51-caliber secondary battery; eight 3-inch, 50-caliber anti-aircraft battery; and two submerged torpedo tubes.

NOTE.—The eight 3-inch anti-aircraft guns will be replaced by a battery of 5-inch, 23-caliber anti-aircraft guns.

California and Tennessee.—Both electric drive; 29,600 horsepower; speed, 21 knots; four screws; displacement, 32,600 tons; carry twelve 14-inch, 50-caliber guns in four turrets; twelve 5-inch, 51-caliber secondary battery; eight 3-inch, 50-caliber anti-aircraft battery; and two submerged torpedo tubes.

New Mexico, Idaho, and Mississippi.—*New Mexico* has electric drive; four screws; 21 knots; horsepower, 31,200. *Idaho* has Parsons turbines and *Mississippi* Curtis turbines; both have four screws, develop 32,000 horsepower, and speed of 21 knots; displacement of all three, 32,000 tons.

Pennsylvania and Arizona.—*Pennsylvania* has Curtis turbines, four screws, 29,366 horsepower, 21 knots. *Arizona* has Parsons turbines, four screws, 34,000 horsepower, 21 knots. Displacement both ships, 31,400 tons.

These five last-named ships carry the same armor and armament as the *California*, except they have two additional 5-inch guns.

Oklahoma and *Nevada*.—*Oklahoma* has triple-expansion, reciprocating engines; two screws; horsepower, 21,703; 20½ knots. *Nevada* has Curtis turbines, two screws, and 23,312 horsepower, and same speed as the *Oklahoma*. Displacement both ships, 27,500 tons. Carry ten 14-inch, 45-caliber guns in four turrets, two 3-gun turrets, and two 2-gun turrets; twelve 5-inch, 51-caliber broadside battery; eight 3-inch, 50-caliber antiaircraft; and two submerged torpedo tubes.

New York and *Texas*.—Both have triple-expansion reciprocating engines, two screws, 28,100 horsepower, 21 knots. They carry ten 14-inch, 45-caliber guns in five turrets; sixteen 5-inch, 51-caliber secondary battery; eight 3-inch, 50-caliber antiaircraft battery; and four submerged torpedo tubes. Displacement, 27,000 tons.

Arkansas and *Wyoming*.—Both have Parsons turbines, four screws, 28,000 horsepower, 21 knots. Each carries twelve 12-inch, 50-caliber guns in six turrets, sixteen 5-inch, 51-caliber broadside battery; two submerged torpedo tubes; and eight 3-inch, 50-caliber antiaircraft guns. Displacement, 26,000 tons.

Utah and *Florida*.—Both have Parsons turbines, four screws, 28,000 horsepower, 21 knots. Both carry ten 12-inch, 45-caliber guns in five turrets, with rest of armament same as *Arkansas* class. Displacement, 21,825 tons.

NOTE.—These last six battleships are being modernized by conversion to oil burners, addition of blisters to the hull, and provision for additional protection against bombs.

(b) Cruisers, second line, features of.—All these ships have reciprocating engines, two screws, and burn coal. *Seattle* class carries four 10-inch, 40-caliber guns in two turrets; sixteen 6-inch, 50-caliber guns, and twelve 3-inch, 50-caliber guns in secondary battery; two 3-inch, 50-caliber antiaircraft, and four submerged torpedo tubes. Armor, 5 inches on water line, 8 inches on barbets, 9 inches on turrets and conning tower. Speed, 22 knots; displacement, 14,500 tons. *Pittsburgh* class carry four 8-inch, 45-caliber guns in two turrets; two submerged torpedo tubes; fourteen 6-inch, 50-caliber, ten 3-inch, 50-caliber, two 3-inch, 50-caliber antiaircraft guns. Armor, 6 inches on water line and turrets and 9 inches on conning tower; displacement, 13,680 tons; speed, 22 knots. *St. Louis* class carry twelve 6-inch, 50-caliber guns, and a secondary battery of 3-inch, 50-caliber, and two 3-inch, 50-caliber antiaircraft guns; no torpedo tubes; armor, 4 inches on water line, 5 inches on conning tower; displacement, 9,700 tons; speed, 22 knots. *Rochester* has four 8-inch, 45-caliber main battery, eight 5-inch, 50-caliber, and two 3-inch, 50-caliber antiaircraft guns; speed, 21 knots; and displacement of 8,150 tons; armor, 4 inches on water line, 6½ inches on turrets, and 7 inches on conning tower.

NOTE.—All these cruisers have 4 to 6 inch armor around casemates and 2½ to 4 inch protective deck. The displacement given is normal displacement. These cruisers are lightly armored and have comparatively light armament. Their speed is about that of a modern battleship. Their use is mainly for escort duty.

NOTE.—Cruisers, first line, or battle cruisers are now limited to 35,000 tons displacement. They carry the same battery as a battleship, but are more lightly armored. They sacrifice protection for speed. Before the Washington Conference, our

Navy had six of these building to carry 16-inch, 50-caliber guns, and to have a speed of 35 knots. They would be used as scouts, their great speed and power being valuable to pierce the enemy's scouting screen and getting information which weaker scouts could not obtain. They could also take their places in the main battle line. Four of these ships were scrapped and the other two, the *Lexington* and the *Saratoga*, are being converted into airplane carriers.

(c) **Light cruisers, first line.**—*Pensacola* class have designed horsepower of 107,000 and speed of 32½ knots; carry ten 8-inch guns and four 5-inch AA guns. They have a standard displacement of 10,000 tons, length of 570 feet, 585½ feet overall, and a maximum beam of 65 feet 3 inches. The *Pensacola* and *Salt Lake City* were laid down in 1926.

Omaha class have turbines with reduction gear, four screws, 90,000 horsepower, and speed of 34 knots; carry twelve 6-inch, 53-caliber guns as main battery and two triple torpedo tubes. They are designed especially for scouting. Their displacement is 7,500 tons.

(d) **Light cruisers, second line.**—These are old cruisers. The *Chester* class are of 3,750 tons displacement; carry four 5-inch, 51-caliber guns, with speed of about 26 knots; have 2 inches armor on water line. The *Denver* class are 3,200 tons displacement (sheathed ships); carry eight 5-inch, 50-caliber guns, with speed about 16.7 knots. Have 2½ inches steel armor on slope of protective deck. This class is used in Central American patrol duty.

(e) **Aircraft carrier, first line.**—These are large, swift ships (ex-battle cruisers) designed to carry aircraft, with a top deck for airplanes to take off and land. The *Saratoga* and *Lexington* are 850 feet in length, 880 feet overall, with a beam of 106 feet (extreme). They

are designed for 180,000 horsepower and speed of about 33½ knots. They carry eight 8-inch, 55-caliber guns, and twelve 5-inch, 25-caliber antiaircraft guns, are electrically driven by G. E. turbines, four screws, and are designed to carry 78 planes, 32 of which will be bombers.

NOTE.—Airplane carriers are limited to 8-inch guns by Washington Conference.

(f) **Aircraft carrier, second line.**—The *Langley* is the only type of this class. She was converted from a collier, and has a speed of 15 knots.

(g) and (h) **Mine layers.**—These are specially designed ships for lying mines. They have slow speed and carry a small battery of 5-inch guns. They carry special equipment for dropping mines over their sterns. They carry from 50 to 600 mines.

(i) **Destroyers, first line.**—The latest or flush-deck destroyers are about 1,215 tons displacement, have speed of 35 knots, and carry four 4 or 5 inch guns and four triple torpedo tubes. The older 1,000 tonners have speed of 30 knots and carry four 4-inch guns and four twin torpedo tubes.

(j) **Destroyers, second line.**—These have speed of about 30 knots and carry four 3-inch guns and three twin torpedo tubes.

(k), (l), and (m) **Submarines** are specially designed to operate under the surface. For this purpose they are fitted with ballast tanks, which when flooded cause the submarine to float with just a few hundred pounds buoyancy. They are then submerged by going ahead with their electric motors and operating their diving rudders. They are fitted with electric motors and storage batteries for use when submerged. For sur-

face use they use oil engines. Submarines of the first and second line are designated to operate from a base near at hand. The second line have only about 14 knots speed, not enough to accompany the fleet. They also lack the endurance to accompany the fleet on distant operations. The first line, of course, are better than the second line. The fleet submarines have speed and endurance enough to accompany the fleet in all distant operations.

NOTE.—Cruisers and mine-laying submarines have been designed and one mine-laying submarine has been built for our Navy. Patrol vessels, submarine chasers, and eagle boats are small vessels, unprotected, lightly armed, and of moderate speed, for patrol work or for special purposes. They may carry depth charges for use against submarines. The auxiliaries are specially designed for the work they are to do. They are unprotected, lightly armed, and of moderate speed.

Aircraft.—Aircraft is in such a state of rapid development at the present time that it is hardly practicable to go into any detailed description of any of the planes. The general types for use aboard ship are those especially designed for scouting, observation, and combat. The scouting planes are fast and have large fuel capacity. The observation planes are usually smaller than scouting planes and are used especially for spotting. The combat planes are very fast planes designed specially for use against enemy planes. Airplane carriers will carry heavy bombing and torpedo planes in addition to the above.

All our battleships and cruisers are supplied with catapults for "shooting" planes from the decks of the ships. Each one of these ships carry from one to three planes, but this number is subject to great change as development of aircraft continues.



FIG. 77.—U. S. S. *West Virginia*



FIG. 78.—U. S. S. *Huron*



FIG. 79.—U. S. S. *Detroit*

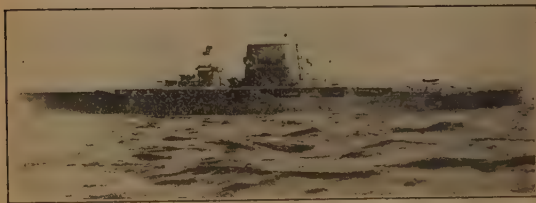


FIG. 80.—U. S. S. *Saratoga*



FIG. 81.—U. S. S. *Langley*



FIG. 82.—U. S. S. *King*



FIG. 83.—U. S. S. *Bridge*



FIG. 84.—U. S. S. *V-1*



FIG. 85.—U. S. S. *Eagle* 33



FIG. 86.—U. S. S. *Oglala*



FIG. 87.—U. S. S. *Procyon*



FIG. 88.—U. S. S. *Chaumont*

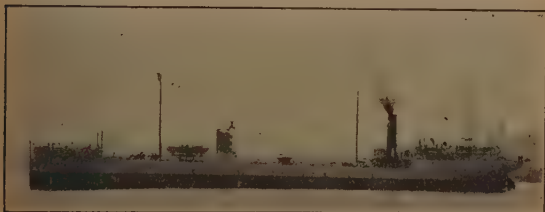
FIG. 89.—U. S. S. *Asheville*FIG. 90.—U. S. S. *Pecos*



FIG. 91.—Submarine chaser S. O. 26



FIG. 92.—U. S. S. *Relief*



FIG. 93.—U. S. S. *Mallard*



FIG. 94.—U. S. S. *Bagaduce*

CHAPTER 25

SUBJECT H.—EVENTS IN THE DAILY ROUTINE—GENERAL DUTIES IN CONNECTION WITH LIFE ABOARD SHIP

THE ROUTINE IN PORT AND AT SEA

(a) Daily routine in port.

- A. M. 4.00. Call ship's cooks of the watch.
- 4.45. Call police petty officers, boatswain's mates, buglers, and hammock stowers.
- 5.00. Reveille; call all hands, pipe "up hammocks," serve out coffee; light the smoking lamp.
- 5.15. Haul over hammock cloths and stop them down; police petty officer report decks clear of hammocks.
- 5.20. Pipe sweepers; sweep down thoroughly before decks are wet.
- 5.25. Off shoes and socks, or put on boots, according to weather conditions; get out wash-deck gear.
- 5.30. Turn to; out smoking lamp; execute morning orders; stow away ditty boxes; clear lower decks. Five minutes before sunrise station men for turning off anchor, boom, and gangway lights; scrub clothes.
- 6.00. Knock off scrubbing clothes; trice up lines; hoist ashes.
- 6.45. Take off gun covers and hatch hoods, unless the weather is foul; hammock stowers haul back hammock cloths.

- A. M. 7.00. Up all hammocks.
7.15. Mess gear; light smoking lamp; publish uniform of the day.
7.30. Breakfast.
8.00. Colors.
8.15. Turn to; out smoking lamp; deck and gun brightwork.
8.30. Sick call.
8.45. Retreat from brightwork; sweep down; stow away all wash-deck gear and all ditty boxes; clear up the deck for quarters.
9.10. Officers' call; divisions fall in for muster.
9.15. Quarters for muster and inspection; physical drill, followed by the drill prescribed.
11.30. Retreat from drill; pipe down scrubbed clothes, if dry; sweep down; light smoking lamp; mast for reports and requests.
11.45. Mess gear.
- M. 12.00. Dinner.
- P. M. 12.30. Band call; band concert till 1.
1.00. Turn to; out smoking lamp; pipe sweepers; pipe down aired bedding if up; pipe down wash clothes, if dry.
1.30. Drill call.
2.30. Retreat from drill; turn to.
4.00. Knock off work; pipe down clothes, if up; sweep down; light smoking lamp.
4.30. Lay aft the liberty party.
5.30. Clear up decks; stow away ditty boxes.
5.45. Mess gear.

- P. M.** 6.00. Supper. Five minutes before sunset call guard of the day and band; station detail for all lights; turn out lights at sunset.
- 6.30. Turn to; pipe sweepers; wet down decks for scrubbing clothes.
- 7.30. Hammocks; no smoking below the main decks.
- 8.00. Muster the anchor watch; searchlight and signal drills, if ordered.
- 8.30. Trice up the clotheslines.
- 8.55. First call; out smoking lamp.
- 9.00. Tattoo; pipe down; silence; muster and set first anchor watch.
- 9.05. Taps.

(b) Daily routine at sea.

- A. M.** 2.00. Relieve wheel and lookouts.
- 3.50. Call the watch section.
- 4.00. Relieve the watch; muster the watch section and lifeboat's crew; light smoking lamp; call ship's cook of the watch. Five minutes before sunrise station details at running lights; turn off at sunrise; relieve lookouts and station mast-head lookouts.
- 5.00. Call idlers and section of the watch sleeping in; coffee.
- 5.20. Pipe sweepers.
- 5.30. Turn to; out smoking lamp; execute morning orders.
- 6.00. Relieve the wheel and lookout; trice up clotheslines.
- 6.45. Hammock stowers haul back hammock cloths.

- A. M. 7.00. Up all hammocks.
7.15. Hammock stowers stop down hammock cloths; mess gear; light smoking lamp.
7.30. Breakfast; shift into the uniform of the day during the meal hour.
8.00. Relieve the watch (both sections on deck); muster watch and lifeboat's crew.
8.15. Turn to; out smoking lamp; deck and gun brightwork.
8.30. Sick call.
8.45. Knock off bright work; sweep down; stow away ditty boxes and wash-deck gear; take down towel line; clear up decks for quarters.
9.10. Officers' call; divisions fall in for quarters.
9.15. Quarters for muster and inspection; physical drill, and drills as prescribed.
10.00. Relieve the wheel and masthead.
10.30. Retreat from drill; pipe down washed clothes, if dry; sweep down.
11.45. Mess gear.
M. 12.00. Dinner.
P. M. 12.30. Relieve the watch; band call.
1.00. Turn to; pipe sweepers; out smoking lamp.
1.15. Drill call, if ordered.
2.00. Relieve the wheel and masthead.
2.15. Retreat from drill; pipe sweepers; turn to.
3.30. Pipe down wash clothes, if up.
4.00. Relieve the watch; muster watch and lifeboat's crew.

- P. M. 4.30. Sweep down, knock off ship's work; light smoking lamp. Five minutes before sunset station detail at running lights; turn on running lights with senior ship present; station deck lookouts; muster lifeboat's crew; inspect lifeboats.
- 5.30. Clear up decks; stow away ditty boxes.
- 5.45. Mess gear.
- 6.00. Supper; relieve the wheel and lookouts.
- 6.30. Turn to; sweep down; wet down decks for scrubbing clothes.
- 7.00. Band concert for crew until 8.
- 7.30. Hammocks; no smoking below decks.
- 8.00. Call the watch; relieve the wheel and lookouts; relieve the watch; muster watch and lifeboat's crew; turn out all but standing lights and lights in officers' quarters and chief petty officers' mess room.
- 9.00. Out smoking lamp; turn out lights in chief petty officers' mess room.
- 10.00. Relieve the wheel and lookout; turn out lights in officers' quarters unless an extension has been granted.
- 11.50. Call the watch.
- 12.00. Relieve the watch; muster the watch and lifeboat crew.

(c) The above routines are generally used by all ships in our Navy. Special conditions may cause variations in the time when some of these duties are performed, and special types of ships will not be required to perform all the duties enumerated, but these samples of routine are generally in use.

NOTES ON ROUTINE

(1) **Reveille.**—The buglers sound reveille with the stroke of the bell, if occurring on the hour or half hour. The boatswain's mates, in concert, pipe their call "All hands," and get the crew turned out quickly. The police petty officers make rounds to see that all men are out promptly and are dressed and are lashing hammocks. The cooks—who have been called earlier—get coffee ready for serving out to the different divisions. Ten minutes are allowed from reveille until all hammocks are stowed.

(2) **Bell hammocks.**—Certain men who have had night watches are allowed to sleep in until 7 o'clock. Some men also who have been up late on duty may obtain permission from the officer of the deck to sleep in. When these 6-bell hammocks are stowed, the hammock cloths are stopped down for the day, and the nettings are afterwards entered only by permission from the officer of the deck.

(3) **Turn to** is the signal for work to begin. On special occasions, such as coaling, painting ship, etc., the time of "turn to" may vary greatly; the time is always specified in the "morning orders" of the executive officer. Smoking ceases; the smoking lamp is put out; work begins, sweepers are piped; gear is laid up off the deck to keep dry, if decks are to be scrubbed; and preparations for cleaning ship are made.

(4) **Piping sweepers.**—Piping sweepers is a pipe sounded by the boatswain's mate as an order for the men of the various divisions who are detailed as sweepers to get their brooms and sweep down the part of the ship assigned them. Sweeping should always be done before morning work in order to remove loose dirt and to have a clean deck for scrubbing clothes.

The sweepers should sweep every part of the deck, particularly all corners. Men must always make way for sweepers. The petty officers of the various parts of the ship are particularly charged with the thoroughness of this duty. The sweepings should never be swept into a scupper, but always into a dustpan, and then they should be thrown into the ash or slop chute. During the daily routine, when sweepers are piped, orders are given to "clean out all the spit kits and wipe off all ladders." The spit kits are taken to the head, emptied, and washed out, and about 1 inch of water is put in them before they are returned to their places. All ladders in the ship should be wiped off with a damp swab.

(5) **Washing decks.**—The various parts of the ship are wet down with clean salt water. This is accomplished by use of a small rubber wash-deck hose from a hydrant on the fire main. Every part of the deck is wet down thoroughly. When washing decks, if the temperature permits, the crew will take off shoes and socks. In cold weather rubber boots are worn while washing down. If it is a morning for scrubbing, the boatswain's mates pipe and call "Scrub and wash clothes," or "Scrub hammocks" (bags, blankets, or mattress covers); otherwise the word is immediately passed "Scrub down the deck" or "Scrub down the deck with sand," "Clean all paint work." When holystoning docks, too much sand is usually used. A thin sprinkling of sand is much more efficient and is more easily removed when washing down. For washing down, long bristle scrub brushes are used. Care must be taken to get into every nook and corner and wash all dirt, sand, and soap off the deck into the scuppers. Corn brooms should never be used on a

wet deck, as they are immediately ruined. When the word "Dry down the deck" is passed, men with squilgees form abreast and go down the deck shoving the water before them. The squilgee gets most of the water off the deck. A swab is used in the wake of the squilgee to wipe up the remainder and to remove water from corners and deck sockets.

(6) **Liberty.**—Liberty is usually granted by watches, each watch alternating liberty on week days and alternating 48 hours' liberties on week ends. Special liberty is granted men by the executive officer at his daily "mast for requests" at 11.30 a. m. Men must see their division officers before going to the executive for special liberty. Liberty parties are called aft at the proper time by the officer of the deck, and he inspects them carefully for cleanliness and uniform before allowing them to leave the ship. Men wearing soiled uniforms or incomplete uniform, or having shoes not shined, or having hair not cut properly, or not properly shaved will not be permitted to go on liberty. The method of making out liberty lists varies on different classes of ships, and men must learn the system in use on their ship.

(7) **Hammocks.**—At the call of "Hammocks" all hands go immediately to the nettings where their hammocks are stowed and fall in two abreast, facing aft. The hammock stowers undo the stops of the hammock cloths. The police petty officers inspect to see that all hands are standing by the nettings and then report to the officer of the deck. The officer of the deck orders the boatswain's mate of the watch to pass the order "Trice up the hammock cloths." The hammock stowers carry out the order. The officer of the deck then orders "Pipe down hammocks." The boatswain's mate

sounds the "pipe down" call and all hands get their hammocks.

(8) First call, tattoo, and taps.—First call is sounded at 8.55 p. m. and is the signal for out smoking lamp and for all hands to get ready for turning in. Tattoo is sounded at 9 p. m. and is a signal for all hands to turn in and keep silence about the decks. There is no excuse for men to be roaming about the decks or answering calls of nature after this call. Taps is sounded at 9.05 p. m. No one is allowed out of hammocks after taps except for urgent calls of nature or other important reasons.

BRIGHTWORK

Brightwork is a term applied to all metal objects, whether steel or brass, that are to be kept bright by polishing. Brightwork polish should be used sparingly and all trace of it carefully removed after polishing. Care must be taken not to leave stains on the paint work or gasket. In polishing brass dogs, care must be taken not to cause undue wear on the threads. Emery cloth must not be used on working parts, such as dogs, clips, etc., on water-tight doors. The metal gasket strips on water-tight doors must not be removed for shining as the holding-down screws are frequently lost or the strips improperly replaced. In gun brightwork the use of emery cloth is strictly forbidden except when used under the immediate direction of the battery officer.

NOTE.—Brightwork gear must be carefully stowed in the place set aside for it immediately after knocking off brightwork. Frequently the rags and polish are stowed in voice tubes or left about the decks.

SICK CALL

Sick call is sounded at 8.30 a. m. If sick, men report to the sick bay at this time. In case of accident or serious illness, men can report to the sick bay at any time. The doctor is the only one on board who can excuse men from duty on account of illness. Concealing a disease is a serious offense, as men thereby expose their shipmates to it. Feigning sickness in order to escape duty is also a serious offense and is always detected by the doctor. The offense is unmilitary, dishonest, and involves lying.

QUARTERS AND DRILL

(a) Morning quarters usually is held at 9.15. The signal for quarters is the "assembly sounded on the bugle." The officers' call is sounded five minutes before the "assembly." Men of the various divisions fall in for muster in the respective parts of the ship assigned them. The division officer inspects the men, especially as regards neatness and cleanliness. Clean clothes must always be worn to quarters. Men must be carefully shaved and neat in every respect. The division is mustered by the petty officers in charge of sections. The division officer then reports to the head of his department. Meanwhile the division may be allowed to "rest"; but if the division officer or a petty officer has not given this order, absolute silence in ranks must be maintained, and if the order "at ease" has not been given, men must stand at the position of "attention" and maintain absolute silence. Carelessness or unmilitary bearing of men at quarters is a sign of careless, unmilitary, and often an inefficient division on board ship.

(b) After quarters, setting-up exercises are held, after which the men are dismissed in order to get into uniform for the drill which is to follow. All men should have a uniform handy, either in their bag or locker, so that they can shift into the proper uniform for drill in a few minutes. When drill call is sounded, men go to their stations for drill on the double and maintain silence. A slow and noisy division can not be other than a very inefficient division. Drills are held to train all hands into an efficient fighting unit. All drills have this one mission in view. If all hands fail to act at drills as they should act in a time of great emergency, they would be found wanting at this emergency.

(c) Members of the engineer department, except the auxiliary watch, usually muster at their station in working clothes at 8.15 a. m. on work days and proceed immediately with their work. They attend the "all hands" drills, such as general quarters, fire, collision, and abandon-ship drills, and proceed immediately with their overhaul and cleaning work after "secure." The members of the auxiliary watch not on duty fall in at quarters in the uniform of the day.

SETTING UP

The primary object of the setting-up exercise is to increase and maintain the development and suppleness of a man's muscles and to correct the most common physical defects that result from the neglect of systematic exercise. Every man should take pride in his physical condition; he should learn the correct position of the trunk, head, chest, and shoulders. Careful and conscientious work during a few minutes' setting-up drill will correct stooping and rounded

shoulders, strengthen the back and abdominal muscles, and increase the lung capacity.

MUSTERS AND INSPECTIONS

(a) For general musters, divisions fall in at quarters and are marched by their division officers to the quarter deck. The officers then turn their divisions over to the senior petty officers of the divisions and form line on the starboard side of the quarter-deck. The reading of all general orders and communications effecting men, sentences of court-martial, the presentation of medals, etc., take place with the crew in this formation. On the first Saturday of each month the "Articles for the government of the Navy" are read.

(b) Inspection by division officers is held at every quarters for cleanliness of uniform and person. On Saturday the uniform is usually "dress," and men should wear the best they have and be scrupulously clean and neat in appearance. After the division officer inspects and reports to his head of department, ranks are opened and the front rank is faced about and dressed. When the captain approaches in the course of his inspection, the order, "Right-hand salute" is given. Every man salutes with his right hand, looks toward the captain, keeps hand at salute until the order "Two" and then drops hand smartly to the side. The captain then inspects the division.

(c) The division and division petty officers inspect all parts of their ship except double bottoms every day for cleanliness. The first lieutenant also inspects all parts of the ship daily for cleanliness, neatness, and upkeep. The captain and executive inspect all lower decks once a week, usually on Friday, and the

upper decks every Saturday. When every man does his share to prevent dirt and all men clean their stations, it is an easy matter to pass all these inspections. However, this ideal condition is seldom obtained, and this work which should never be hard is often an endless and seemingly a hopeless task. Every man has some cleaning station and every man helps to make his station dirty. If everyone helps him to keep it clean, the ship will soon be spotless, and, what is more, but little work will be necessary to keep it so.

(d) Admiral's inspections are held every quarter. Two of these inspections are for cleanliness and upkeep only. One is the semiannual inspection in which the battle-efficiency inspection is added to the regular quarterly inspection. The other is the annual inspection, which includes all drills as well as everything given in the semiannual inspection. It should be the ambition of all hands to pass a good admiral's inspection. These inspections will show how your ship compares with the others; how you, yourself, compare with the other sailors on those ships. When the admiral can call your ship a "smart ship," then you know that you and those about you are "smart sailors" and can be depended upon anywhere and at any time. A "smart ship" is always a happy ship. It shows that everyone on board is considerate of everyone else, that everyone tries to help and cooperate with each other, and that everyone knows his job and is doing it.

(e) About once every three years the Board of Inspection and Survey inspects each ship to determine its material condition. This board inspects all parts of the ship, all machinery, ordnance material, and general equipment to determine its readiness for service.

MESSES

The supply officer of the ship has charge of the general mess. He is assisted by commissary stewards, cooks, bakers, butchers, and jacks-of-the-dust as are necessary for the purchase, stowing, issuing, and preparation of food for all hands. The ship's crew is divided into messes of about 20 men each, each mess being made up of men from the same division as far as practicable and placed in that division's part of the ship. A petty officer is in charge of each mess, and all complaints by members of the mess must be made to this petty officer in charge. The petty officer of the mess should then investigate the complaint and, if necessary, bring the complaint to the attention of the officer of the deck. The petty officer is responsible that proper order is kept, that food is not wantonly wasted, and that sufficient food is provided. A mess cook is detailed to each mess who is responsible for the cleanliness of the mess table and mess gear, serves food to the mess, and assists in drawing provisions and preparing the food for cooking. Messmen are excused from all work in their division part of the ship and from all watches, but they must attend all quarters and drills unless properly excused by the executive officer. Special police petty officers are placed in charge of all messmen, and they are responsible that the messmen carry out their duties, keep their station and mess clean, and keep their persons clean. They inspect the messmen every day and inspect the mess tables and mess gear before every meal.

WATCHES AND DIVISIONS

(a) The ship's companies are divided into two watches, starboard and port, half of each division be-

ing in each watch. Each watch is divided into two sections, so that each division is made up of four sections numbered from 1 to 4, the odd-numbered sections being in the starboard watch and the even-numbered in the port watch.

(b) Each ship has the following departments: Gunnery, navigation, engineer, construction and repair, supply, medical. Each department is divided into divisions, based primarily upon crews assigned to battle stations, as follows:

Gunnery.—All gun, torpedo, and fire-control divisions, including the Marines. Each gun division includes, as far as possible, only one class of gun.

Navigation.—Navigation division for ship control, and all communications control.

Engineer.—Main engine, boiler, auxiliary and electrical divisions for ship propulsion.

Construction and repair.—Construction and repair division for handling casualties to the ship.

Supply.—Supply division for ammunition supply to broadside and antiaircraft batteries.

Medical.—Medical division for supplying first aid in action.

NOTE.—The number of divisions on board ship varies with the size of the ship and with the number and caliber of the guns. In small ships one officer may be head of more than one department.

The executive officer coordinates the work of the various heads of departments and carries out the policies of the captain.

SCRUBBING AND CLEANING

(a) Clothes to be scrubbed should be soaked overnight if practicable in soapy fresh water. Before

soaking clothes, however, be sure that the morning orders allow scrubbing clothes in the morning watch, otherwise there will be no clothesline to dry them, and it is not permissible to keep wet clothes about the decks. Clothes should be scrubbed by hand, with special care taken to get the tapes and seams clean. If clothes are very dirty, it may be necessary to lay them flat on deck and scrub them thoroughly with a brush. The brush is very hard on the clothes and should only be used on new, stiff clothes or on real dirty clothes. After scrubbing, rinse off the clothes with salt water, being especially careful to get all the soap out, as soap will ruin your clothes.

(b) **Hammocks and bags** are laid out flat on deck and scrubbed thoroughly on both sides, using a heavy brush, and then rinsing carefully. Care must be taken to get these clean, as each is inspected before turning in, and those dirty will have to be rescrubbed.

(c) **Blankets and mattress covers** are scrubbed like hammocks and bags. Mattress covers should be changed every "aired bedding" and at least once every week. Blankets should be scrubbed at least once every month.

(d) **Paintwork.**—In cleaning paintwork, sand and canvas take off the paint as well as the dirt unless great care is taken. Fresh water and very little soap will often save much labor. Lye "eats off" paint and should not be used. Rust spots can be removed by canvas and fresh water if care is exercised. Greasy dirt is the hardest thing to remove. For that reason care must be taken by every member of the crew to keep the paintwork clean. Cleaning paintwork does not mean the cleaning of only certain exposed places, so far as possible every nook and corner should be cleaned every morning.

(e) **Linoleum.**—Never let water stand on a linoleum deck, as it will soak into the cracks and soon loosen it from the deck besides causing serious corrosion to the deck.

(f) **Fire hose and canvas** are scrubbed with soap and water and thoroughly rinsed with salt water. Never use sand on fire hose or scrub hose on a sandy deck, as this wears it out very quickly. Hose and canvas must be triced up and dried thoroughly before being stowed away. If stowed away damp, they will soon mildew and spoil.

(g) **Bright woodwork and oars** are scrubbed with sand and canvas.

NOTE.—After washing down decks, all paintwork that has become wet from so doing must be wiped dry. If this is not done, the drops of salt water will evaporate and leave the paintwork speckled with white salt marks which are very untidy and hard on the paint. All depressions in the deck, waterways, etc., must be thoroughly dried with swabs.

DUTIES OF COMPARTMENT CLEANERS

Compartment cleaners are detailed by their division officers and are responsible for the cleanliness and tidiness of the compartments assigned to them. They are also responsible for the proper placing and care of the equipment of the compartments. They are excused from cleaning any other part of the ship, but must attend all quarters and drills.

NOTE.—The section leaders on the upper decks are responsible to the division officers for the equipment in their part of the ship.

SMOKING HOURS

(1) The crew is permitted to smoke from “all hands” to “turn to,” during meal hours, and from the time the hammocks are down until tattoo. The

crew may also be permitted to smoke at other times, such as during holidays, on Saturday and Sunday afternoons, during coaling ship and cleaning up after coaling, and for a limited period during night watches; but these are privileges which may be withheld and should be withheld if they lead to soiling the ship or to other abuses.

(2) Smoking in any part of the ship during divine services is forbidden.

(3) Smoking in the ship's boats, not on detached service, is forbidden.

(4) After the hammocks are down the crew can smoke only on the upper decks.

(5) The police petty officers shall have charge of the smoking lamp and see that it is kept lighted during smoking hours only. They shall take care that there is no smoking in unauthorized places.

(6) While fuel oil is being taken on board no open light, smoking, or electrical apparatus liable to spark shall be permitted within 50 feet of an oil hose, tank, compartment containing a tank, or the vent from a tank. No smoking shall be permitted at any time in a compartment containing a fuel-oil tank or fuel-oil pumps or piping, except that it may be permitted on the fireroom floor in front of the furnaces.

(7) There shall be no smoking while ammunition is being received on board.

LUCKY BAG

The "lucky bag" is a place where the police petty officers stow effects for safe-keeping that are found adrift about the ship. All clothes, etc., found about the decks are placed in the lucky bag. When clothes

are piped down, the police petty officer attends and takes care of all clothes not called for and places these in lucky bag. All effects in this bag belong to the persons who lost them. At frequent intervals the lucky bag is opened and the effects distributed to the owners. Where persons have been guilty of carelessness in leaving their effects adrift, they are placed on the report.

SHIP'S ORDERS

Each ship has a ship's organization bill which contains detailed instructions as to organization and stations of all crews in every emergency drill. In addition to this, the captain through his executive issues ship's orders from time to time, as occasion arises, to cover points not covered by the ship's organization. These ship's orders have the same authority as the ship's regulations. The division officers keep a complete file of them and publish them to their divisions when issued.

MISCELLANEOUS INFORMATION

(a) Galley fires and lights.—(1) All fires used for cooking are extinguished at tattoo unless they are specially authorized by the captain to be continued longer for some specific purpose. When the weather is very warm, they are extinguished as early as possible, if by so doing the comfort of the crew is increased.

(2) All lights except those in the cabins, offices, officers' quarters, and those designated as standing lights are extinguished at tattoo.

(3) The lights on the lower decks are reduced in number before tattoo unless they are required for the comfort of the crew. All lights in the holds, store-

rooms, and orlops, and all open lights in the ship, except those in officers' quarters, are extinguished before 7.30 p. m. or at the time of the evening inspection by the executive officer.

(4) During the night a sufficient number of standing lights throughout the open part of the ship are kept on to enable the officers and crew to turn out, repair to the upper decks, or to attend to any duty arising from a sudden emergency. These are known as standing lights.

(5) During rainy or cloudy weather and at other times when the duties of the ship will permit, sufficient lights are supplied between decks for the crew to read, write, or engage in recreation.

(6) Such light and fires as the captain may deem dangerous are extinguished when the magazines are opened or when handling or passing powder, explosives, or other dangerous combustibles.

(7) In time of war or when necessary to conceal a ship from an enemy, only such lights are used as are deemed advisable by the senior officer present.

(b) **Matches.**—None other than safety matches are permitted on board, and the captain prescribes the necessary precautions to be observed in their use. They shall not be used in storerooms, holds, or orlops, and care shall be taken that persons about to enter the magazines and shell rooms have no matches about them.

(c) **Disposal of refuse.**—Wood, barrels, packing boxes, or unpierced metal cans shall not be thrown overboard, either in port or at sea. All such boxes and barrels must be broken up and sent to the fireroom or incinerator; all metal cans must be pierced before being thrown overboard. In confined ports where garbage would constitute a menace to the health or

a nuisance to the people in the vicinity, it shall not be thrown overboard but shall be burned on board ship or otherwise disposed of in some suitable manner prescribed by proper authority.

(d) **Card playing and gambling.**—Card playing is usually forbidden below the berth deck or the third deck at any time. Card playing, checkers, and similar games of chance are usually permitted on the main deck during the dinner hour and after working hours. Dice are forbidden to be used or had in possession and whenever found they are confiscated. Gambling is forbidden in any form at any time or place. On-lookers at gambling are liable to be punished as well as players.

(e) **Visitors.**—Visitors are never allowed below the gun or second deck unless accompanied by an officer. They are never allowed in the turrets or on the bridge unless accompanied by an officer. They are allowed on board ship only with the permission of the officer of the deck at certain stated times established by the executive officer.

(f) **Pets.**—Pets may be brought on board only by express permission from the commanding officer.

(g) **Profanity.**—Profanity or the use of filthy language is a sign of ignorance in the man using it and shows a serious lack of principles required of a leader of men. Habitual use of profanity will prevent advancement in rating and will cause the user to be placed on the report. It is the duty of all men to stop this filthy practice in others.

(h) **Air and gun ports.**—When at sea no ports shall be opened without the knowledge and consent of the captain, and they shall always be opened and closed by men specially appointed for that duty. Ports of

the lower decks shall be closed at sunset unless special authority is granted to keep them open, and a report shall always be made to the officer of the deck when a port is opened or closed. Neither gun nor air ports shall be opened when there is any probability that water will enter to a dangerous extent. Nothing is to be hung up or placed in or thrown out of gun ports.

(i) Quarter-deck, officers' quarters, and bridge.—Men are allowed on the quarter-deck only when they are there on duty. No men are allowed in officers' quarters except on duty. Bridges are for men on duty only.

CHAPTER 26

SUBJECT I.—THE AIM AND OBJECT OF ALL GENERAL DRILLS

WHAT IS INTENDED TO BE ACCOMPLISHED IN A PLACE OTHER THAN THAT IN WHICH ANY PARTICULAR MAN IS STATIONED

(a) General drills are “all hands” emergency drills. Every person on board has a station for each of these drills, and no one is excused from these drills unless permission has been previously obtained from the executive officer by the head of department of the man concerned. Even then the only ones excused are those whose duties are such that to leave them would cause a serious loss to the Government or endanger the safety of the ship.

NOTE.—Fire and rescue party drills, while emergency drills, are not “all hands” drills.

(b) General drills are held to train “all hands” for every emergency. They make of the various members of the ship’s company a well-organized and efficient unit to carry out the big mission of the ship, which is to be always ready for every emergency. They develop teamwork in the ship’s company, so that every department, every division, every section, every crew, every man, knows and does what is required of it for every emergency. Without this teamwork the ship’s company would be but a large number of individuals, no one supporting the efforts of the other and with no

unity of purpose. It would be mob action and not team action. It would result in failure in every action. Teamwork is absolutely necessary to success. Nine stars in a baseball team without teamwork would lose every time to a team composed of nine inferior players but with perfect teamwork. An inferior ship with good teamwork can beat a better ship with poor teamwork. Ten straws put together closely are stronger than hundreds of similar straws acting singly. Unity of action—that is, teamwork—assures success even under the greatest odds.

(c) Each man's station, although it seems unimportant to him, is a cog in the big ship's machine. A weak cog here and there is sure to cause the machine to break down. The strength of a ship's company is made up of the strength of each individual, because, when this individual fails, the crew to which he belongs will fail. This crew, failing at a critical time, will cause its section to fail. This section failing will cause its division to fail, then its department, and finally the ship. Each individual must, at all these emergency drills, do the duties assigned to his station thoroughly and efficiently, and help to develop that unity of action and teamwork with his shipmates that is so necessary for success.

(d) Good teamwork, while essential to success, must be exerted at the proper time. A good pitcher, if he takes too long a time to wind up, might allow a man to score the winning run by stealing home. Time is the big factor in all emergencies. Locking the barn door after the horse has been stolen is of no value. Arriving at your emergency station to find that you are too late to repair the damages will not help the ship. Good teamwork applied in time produces results.

That is why everyone is trained to take his station on board ship on the double. If you do not practice speed during these drills, you will be found late when the fateful emergency calls you to your station. Do not get the idea that emergencies come only in time of war. They can come with frightful consequences by day or by night during peace or during war. That is why these emergency drills are held so often, and that is why every individual must jump at the call.

(e) For all emergency drills the officer of the deck causes the general alarm to be sounded, followed immediately by the distinguishing call for the type of emergency drill. On all occasions of emergency, silence is the first requisite of discipline. Unnecessary noise of any kind makes for confusion. Only those in authority should be heard. A crew of a smart ship goes to its emergency station on the double with no noise or confusion. Men not assigned any particular station should fall in at quarters. All stations should inform central station of the location or character of an injury or emergency. Central station then informs other stations as necessary and takes steps with the repair gangs to assist as necessary. All men not required to stand by at their emergency stations should fall in at quarters as soon as their duties have been completed. When "Secure" is sounded, all gear for the emergency drill will be secured and all hands except those on watch will fall in at quarters. Retreat will be sounded after all divisions have reported secure, and all divisions will then be dismissed.

(f) **Water-tight integrity.**—Double-bottom manhole covers must be kept securely dogged at all times except when opened temporarily for inspection or work. They must never be left open overnight. The doors, hatches, and manholes giving access to all compart-

ments must, when closed for all emergency drills, be securely dogged. No halfway measures in this regard can be tolerated. The call for closing "water-tight doors" is a bugle call, call No. 23 (Ship and Gunnery Drills), and the warning howlers at each door. Water-tight covers to ventilator openings and the valves at bulkheads must all be closed when water-tight doors are closed. Water-tight doors and hatches will be opened after an emergency drill on the call for same on the bugle and by passing the word "Open doors and hatches."

EMERGENCY DRILLS

In the pages that follow, taken from the Ship and Gunnery Drills, 1927, will be found the general rules from which all ships in our Navy make up their organization for these emergency drills. All men must know in general what duties are performed by each department on his ship at each drill. In particular, every man must know the calls and must know in detail his own duties and that of his division for each emergency drill.

FIRE DRILL

General instructions.—Any person discovering fire on board ship will endeavor to extinguish it or prevent the spread of flames. Use will be made of fire extinguishers and other special appliances immediately available. Word shall be sent at once to the officer of the deck.

THE CALLS

- (1) **Emergency signals:**
 - (a) General alarm.
 - (b) Ship's bell rung rapidly, followed by designating number of strokes to indicate location.

(c) Fire quarters on the bugle (call No. 31, Ship and Gunnery Drills), followed by the number of blasts to indicate the location.

(d) Word passed by boatswain's mate as to location of the fire.

(2) Secure signals:

(a) "Secure" on the bugle.

(b) "Secure" by boatswain's mate.

(c) "Secure" over interior communication system.

OFFICERS' STATIONS AND DUTIES

(1) Executive at scene of fire, in charge.

(2) Gunnery officer shall have men stationed at flood cocks and sprinkler valves; be prepared to flood threatened magazines or shell rooms; have dry primers and detonators removed from vicinity of fire.

(3) Navigating officer shall relieve the deck.

(4) Engineer officer, engine room. He shall have an officer stationed at the steam fire-extinguishing manifold, and at the chemical extinguishing valve if the fire is in a compartment so piped.

(5) First lieutenant shall aid the executive.

(6) Medical officer at the sick bay shall make preliminary provision for removal of sick, and shall be prepared to receive injured or to dispatch a first-aid party.

(7) Supply officer shall assure himself that storeroom keys are supplied, and make preliminary provisions for saving public money and records.

SPECIAL DETAILS

The following special details shall assemble well clear of, but near the scene of the fire, under the command of the carpenter:

(1) Repair crew with tools.

- (2) Fire extinguisher details.
- (3) Rescue breathing apparatus details.

GENERAL DUTIES

(1) Connect up and lead out hose to all fire plugs in vicinity of fire. Divisions that are remote from the fire will use their hose to extend other lines.

(2) Put pumps on fire main.

(3) Serve out floodcock, magazine, and storeroom keys.

(4) Flood magazine and shell rooms, if necessary.

(5) Remove explosives, gasoline, oils, and other inflammable material from vicinity of fire.

(6) Close air ports, doors, and hatches where necessary. Care should be taken not to cut off or close unnecessarily the passages and hatches used for access and for communication.

(7) Men having charge of storerooms will stand by them with keys.

(8) Stop blowers or close valves in air ducts where they supply air to the fire.

(9) Be prepared to light up vicinity of fire with portables, lanterns, or electric "bull's-eyes."

(10) If alongside a dock or other vessel, prepare to cast off.

(11) If at anchor, prepare to weigh or slip.

(12) Remove sick and prisoners to place of safety.

TESTING EQUIPMENT

All fire-extinguishing apparatus and equipment shall be tested at routine times to insure its efficiency. Coal bunkers, paint lockers, storerooms, and compartments where fires are most apt to occur should be kept under careful surveillance.

FIRE EXTINGUISHERS

(1) Each vessel (except submarines) is furnished with two 2½-gallon acid-soda nonslop-type extinguishers for use of the fire and rescue party. In general, carbon tetrachloride extinguishers are also furnished for the protection of important electrical apparatus. Two should be located in dynamo rooms or machinery compartments where dynamos are installed, radio rooms, distribution rooms, central stations, interior communication rooms, and battery-charging rooms on ships in general and the main machinery rooms of electric-driven ships; also for protection against leaking fuel oil. Two in each oil-burning fireroom, two immediately outside the paint and oil rooms, galleys, and bakeries using oil-burning ranges or bake ovens.

(2) Oil-burning and fuel-oil carrying ships are furnished with special fire extinguishers for fighting fuel-oil fires, as follows:

(a) CO₂ apparatus, permanently installed, piped to compartments in which fuel-oil leaks might occur and to paint-mixing rooms.

(b) Foam-type apparatus, permanently installed in the firerooms of oil-burning vessels.

(3) Each submarine is furnished with not less than six portable carbon-tetrachloride-type extinguishers.

(4) Each gasoline motor boat is furnished with—

(a) Bucket or box of dry sand.

(b) Two carbon-tetrachloride-type extinguishers located in the engine compartment.

(c) Two acid-soda nonslop-type extinguishers located outside of engine compartment (to be used only in case of the small carbon-tetrachloride extinguishers fail to cope with the fire).

(5) Instructions for testing and the use of extinguishers are furnished with each.

(6) The CO_2 apparatus acts by smothering the fire with CO_2 gas, and is operated from a manifold at a distance from the fire.

(7) The foam-type extinguishers act by releasing a heavy foam which smothers an oil, gasoline, or other fire by spreading over the surface and excluding the air. It is operated by a valve and hose in the fireroom in which it is installed.

(8) The carbon-tetrachloride type is of particular value on a fire of electric origin, because the liquid thrown on the fire is a nonconductor. This type is usually fitted with a hand pump.

RESCUE BREATHING APPARATUS

The saving of life may depend on the ability to send men into compartments filled with irrespirable gas. The possibility also exists that the safety of the vessel may likewise so depend. For this contingency rescue breathing apparatus is supplied to vessels. Intelligent men should be able to find their way into any compartment to locate the flood cocks and to work despite the presence of noxious gases. These details should be composed of members of the repair party who would always be available in action.

FIRE AT GENERAL QUARTERS

Will be fought by the officer and men at the scene of the fire. As far as practicable, the fire of engaged guns must not be interrupted. Effort must be directed to prevent the spread of the flames, to remove spare ammunition to a safe distance, to divert chains of ammunition passers passing too close to the fire, and

to isolate endangered magazines, flooding them if necessary.

COLLISION DRILL

At anchor.—The officer of the deck shall be prepared to veer, to rig in the booms, and to clear the side as far as practicable.

THE CALLS

- (1) **Emergency signals.**—(a) General alarm.
(b) One long blast of the siren.
(c) The warning howlers.
(d) Word passed by boatswain's mate as to location of the injury.
(e) The assembly on the bugle (call No. 8 in Ship and Gunnery Drills).
- (2) **Secure signals.**—(a) Three blasts on the siren.
(b) "Secure" on the bugle.
(c) "Secure" by boatswain's mate.
(d) "Secure" over interior communication system.

OFFICERS' STATIONS AND DUTIES

- (1) **Executive** in general charge.
- (2) **Gunnery officer** shall take immediate charge of the placing of the collision mat.
- (3) **Navigating officer** shall inform himself of the course and distance to the nearest shore, be prepared to serve out charts, navigating outfits, and relieve the deck.
- (4) **Engineer officer** shall see that the pumps are started and are put on flooded compartments or on the drainage system; and shall keep the executive informed as to the condition of all compartments within the limits of his department.

(5) **First lieutenant** shall aid the executive, assist in localizing the damage, and assure himself that the valves and arrangements outside the engineer's department permit the pumping of damaged compartments. He shall exercise supervision over all diving operations.

(6) **Medical officer**, at the sick bay, shall make preliminary provision for removal of sick; and shall be prepared to receive injured or to dispatch a first-aid party.

(7) **Supply officer** shall be prepared to supply store-room keys, and shall make preliminary provision for saving public money and records.

GENERAL DUTIES

(1) Close water-tight doors and fall in at quarters.

(2) Prepare the collision mat; get it over if ordered.

(3) Pump out all flooded compartments.

(4) Localize the flooding as much as possible by closing valves and shoring bulkheads.

(5) Rig and man diving outfit, and prepare to get diver over the side.

(6) Man lifeboats; prepare to lower all other boats; be prepared to rescue or render assistance.

(7) Release prisoners.

(8) Prepare to remove sick.

(9) If at anchor, prepare to get under way.

(10) At night, man searchlights.

(11) Prepare leak stoppers for use.

(12) Be ready to take measures to keep ship on even keel, such as shifting oil, stores, or flooding compartments if necessary.

(13) Man necessary valves to pump out compartments with air-water ejection system.

DETAILED DUTIES

Doors, hatches, and valves should be grouped and groups assigned to squads. At drill it is important to require every "dog" to be secured, and defects which prevent the efficient closing of doors, hatches, or valves to be reported to the division officer at once. These defects shall be immediately remedied.

ESCAPES

The collision bill shall indicate the escapes to the upper deck. Care shall be exercised that no man is sealed up in a compartment.

COLLISION, OR UNDERWATER DAMAGE, AT GENERAL
QUARTERS

No emergency signal shall be made. The senior present in the endangered locality, using men available and the repair crew, will localize the damage.

ABANDON SHIP

General requirements of the bill.—The bill shall provide for—

I

Having all hands provide and put on life jackets.

II

Getting boats and rafts out and embarking as quickly as possible, providing a life jacket for each man and sea ladders, or lines, at points designated for embarking.

III

Getting out, manning, provisioning, and equipping boats and rafts.

IV

The organization should provide for—

- (1) Making two or more trips with the boats.
- (2) Varying the capacity of each type of boat below maximum allowed, regulated by sea conditions.
- (3) Reduced number of boats available due to accident or other conditions.
- (4) Periodical inspection of life belts.

THE CALLS

(1) Emergency signals:

FOR I

- (a) General alarm.
- (b) Abandon ship on the bugle (call No. 30), followed by double time on the bugle (call No. 71).
- (c) The boatswain's pipe "All hands abandon ship."

FOR II

- (a) General alarm.
 - (b) Provisions on the bugle (call No. 18), followed by abandon ship on the bugle (call No. 30).
 - (c) The boatswain's pipe "All hands provide and equip for abandon ship."
- (2) Secure signals:
 - (a) "Secure" on the bugle.
 - (b) "Secure" by boatswain's mate.
 - (c) "Secure" over interior communication system.

STATION AND DUTIES

- (1) Executive in general charge.
- (2) Gunnery officer and (5) first lieutenant shall take immediate charge of embarkation, each on one side of the ship.
- (3) Navigating officer shall relieve the deck, prepare to give the course and distance to land.
- (4) Engineer officer and his assistants repair to their stations in engine and firerooms. All petty officers of the engineer department take steaming stations; relieve as many of the nonrated men as possible.
- (5) First lieutenant. (See (2).)
- (6) Medical officer shall supervise the transportation of the sick and injured to the first crews.
- (7) Supply officer shall save the public money and accounts.
- (8) The ship's company shall be detailed into first crews and second crews.
- (9) Of the officers, generally, the juniors should be detailed to the first crews; the seniors should be detailed to the second crews. Of the men, the junior ratings should generally be detailed to the first crews. Each crew should have sufficient experienced men of the seaman branch to insure proper handling of the boat.
- (10) Provide each man and officer with a life jacket.
- (11) Second crews shall assemble clear of the boats on the bridges and the superstructures.
- (12) First crews shall assemble adjacent to boats.
- (13) The deck petty officers of the second crews shall assist in getting out the boats for the first crews.
- (14) The prisoners shall be released.
- (15) At the proper time notification shall be sent to officers and men below, who then secure boilers and machinery and join the second crews.

(16) Reasonable provision shall be made to save the logs, records, and muster rolls. Confidential books and papers must be saved or destroyed.

BOAT CAPACITIES AND ALLOWANCES

The capacity of boats as shown by their label plate shall be used in assigning men for abandon ship.

The abandon-ship ration is 1 pound of hard bread and three-fourths pound canned meat. The commanding officer will specify the quantity and location of hard bread and canned meat, which is to be kept in readiness for placing in boats in event of necessity for "abandoning ship."

Water.—The amount of water carried in breakers for abandon ship is based upon the number of men that can be carried at one time in the ship's boats. The allowance per man on this basis is one-half gallon on battleships, battle cruisers, and cruisers, first line, and $1\frac{1}{2}$ gallons on all other vessels.

ADDITIONAL FOR PROVISIONING AND EQUIPPING

- (1) Officers provide pistols and ammunition.
- (2) The assistant navigator takes chart and navigation gear.
- (3) The signal officer takes rockets, Very pistol, and signal stars.
- (4) Where circumstances warrant and time permits, boats should be provisioned as the particular occasion demands.
- (5) The boat equipment prescribed by the Boat Book shall be carried by all boats.

RETURN OF BOATS

The boats will be brought back by details from the first crews to take off the second crews and make other trips as required.

FIRE AND RESCUE

Employment.—The fire and rescue party may be called to assist a vessel on fire, to prevent the spread of flames to shipping, to render assistance on shore, or to rescue people from a vessel in distress. As the particular emergency can not be foretold, the entire equipment specified should always be provided. Boats should be commanded by regular boat officers.

THE CALLS

- (1) Emergency signals:
 - (a) General alarm.
 - (b) Assembly on the bugle (call No. 8).
 - (c) The boatswain's pipe "Away fire and rescue party."
- (2) Secure signals:
 - (a) "Secure" on the bugle.
 - (b) "Secure" by boatswain's mate.
 - (c) "Secure" over interior communication system.

ORGANIZATION

- I. The rescue detail.
- II. The fire detail.
- III. The relief detail.

THE RESCUE DETAIL—I

Boats and organization.—To be taken from the division or divisions that man the specified boats, each of those divisions to have a complete organization in each watch, a medical officer, with outfit, to stand to go with this detail. In addition to the regular equipment each boat will take—

- (a) One life jacket for each officer and man in the boat.

(b) One ring life buoy fitted with hauling line.

(c) One hand grapnel on a line.

In port a power boat should be used if immediately available.

THE FIRE DETAIL—II

Boats and organization.—The boats designated should be those which are quickly hoisted out, adequate, and have motive power. Each watch of the divisions from which the fire details are drawn should contain a complete fire detail, so that with men on liberty the organization can handle the emergency. The necessary artificers should be similarly detailed.

Equipment.—Each boat should carry its regular equipment, excepting spars. The special equipment should be provided by an adjacent division, leaving the fire details free to man their boats.

(1) The first boat to go out should carry—

(a) Boat officer and crew.

(b) Artificer with unshackling kit.

(c) Rescue breathing apparatus detail.

(d) One life jacket for each officer and man in the boat.

(e) One ring life buoy fitted with hauling line.

(f) Two hand lanterns.

(g) Two foam-type extinguishers.

(h) Six buckets.

(i) Fire-party chest, containing—

(1) Two axes.

(2) One crowbar.

(3) Two grapnels fitted with chain and rope lanyards.

(4) Two heaving lines.

(5) Six bucket lanyards.

- (6) Two cold chisels.
- (7) Two ball-and-peen hammers.
- (8) One maul.
- (9) One Stillson wrench.
- (2) The second boat to go should carry—
 - (a) Boat officer and crew.
 - (b) Carpenter or mate.
 - (c) Handy-billy pump crew.
 - (d) One life jacket for each officer and man in the boat.
 - (e) One ring life buoy fitted with hauling line.
 - (f) Two hand lanterns.
 - (g) One handy-billy pump.
 - (h) Two lengths of section hose with strainer.
 - (i) Three lengths of fire hose.
 - (j) One nozzle.
 - (k) One spanner.
 - (l) One reducer.
 - (m) One jigger and two straps.
 - (n) One 5-inch line.

THE RELIEF DETAIL—III

Employment.—(a) To relieve or to augment the fire and rescue details.

(b) To be armed for shore duty, to assist the local authorities in preserving order, and protect property.

(c) To respond to the local fire regulations at a navy yard.

(d) To man additional boats for rescue duty.

Organization.—It should be organized for each watch from a division or divisions not furnishing the rescue or fire details.

BATTLE DRILL

Preparedness.—It is the duty of the ship to take the initiative in maintaining a full allowance of fuel, ammunition, stores, and spare parts. It may become impossible to overcome defects and supply deficiencies when hostilities are impending. A ship on leaving port should at all times be prepared for action on short notice. Guns should be kept bore sighted. The stripping and clearing of the ship should mean only the accomplishment of details contributing to the offensive use of the armament and to the protection of personnel and material.

Thoroughness.—Clear ship is to be considered as an evolution in which thoroughness is the first consideration.

TWO STAGES OF CLEAR SHIP

Ships shall be cleared for battle as far as material is concerned in two stages under the following designations:

I. Strip ship.

II. Clear ship for action.

I. STRIP SHIP

When done.—This shall be done when war is impending.

Material to be landed.—(For drill and inspection the following material shall be tagged "Store." Boats may be anchored off):

(1) Boats, except those designated by the commander in chief.

(2) Generally everything inflammable or liable to cause splinters that can be dispensed with.

(3) Stanchions and davits not needed. (Facilities for spreading certain awnings should be retained.)

- (4) Unnecessary canopy frames.
- (5) Unnecessary clothing of officers and men.
- (6) Substitute wind sails for ventilators where possible. Protective preparations (need not be done for drill and inspection).
- (7) Rig wire splinter nets under engine-room and fire-room gratings; fit war heads on torpedoes (need not be done at drill or inspection).
- (8) Rig splinter screens and mantlets.

II. CLEAR SHIP FOR ACTION

The call.—The boatswain's pipe "All hands clear ship for action."

General duties.—(For drill and inspection the following details need not be completed, but the ship's bill shall show in detail what should be done):

- (1) Prepare for full power.
- (2) Stow in torpedo rooms detonators and dry primers for use in torpedoes. Others shall be stowed in safe compartments well below the water line.
- (3) Prepare to load torpedoes.
- (4) Release prisoners.
- (5) Throw overboard unnecessary inflammable oils, paints, and liquids (for drill and inspection the following shall be done):
- (6) Prepare the battery for action.
- (7) Prepare dynamos, air compressors, and fire and oil pumps for service, and start those necessary.
- (8) Test out all fire-control and ship-control communications and instruments.
- (9) Connect up and test out fire hose (secure hose so as to be clear of blast of guns).
- (10) Rig all necessary blast screens; secure searchlight against blast.
- (11) Throw in battle circuits; throw out all circuits not required for action.

- (12) Prepare auxiliary lighting arrangements.
- (13) Rig battle-signal stations (radio and flag), and provide means for making recognition signals.
- (14) Rig repair station; prepare collision mat.
- (15) Rig dressing station and prepare transportation for wounded.
- (16) Supply first-aid packages.
- (17) Supply drinking water.
- (18) Prepare auxiliary steering and ship-handling stations.
- (19) Shut steam not needed off all unprotected leads. Prepare to operate boiler stop and safety valves from outside boiler compartments.
- (20) Wet down weather decks and plug scuppers. Put water in boats and lash canvas over them.
- (21) Provide grapnels for clearing the screws.
- (22) Secure anchors, unbend chains, and pay below (while on soundings keep one chain bent).
- (23) Stow life preservers in convenient but protected places.
- (24) Close the water-tight doors and hatches designated to be sealed during action; close battle ports; at night screen lights (attention is invited to the necessity for not interrupting the means of access or of communication to the various parts of the ship).
- (25) Unship and secure the ventilators and ladders that interfere with the battery.
- (26) Stowage shall be assigned to the following, which will leave free passage for the ship's company and protection from gunfire:
 - (a) Navigational instruments.
 - (b) Coaling gear.
 - (c) Mess and galley gear.
 - (d) Sick-bay mattresses not needed, bags, hammocks ditty boxes, and cots.

- (e) Gunnery training gear.
- (f) Diving gear.
- (g) Field guns.
- (h) Wash-deck gear.
- (i) All other loose gear.
- (27) Before battle men shall bathe and shift into clean underclothes.
- (28) Supply ammunition.
- (29) Have small arms and ammunition ready for serving out.
- (30) Masthead the battle ensigns and make all final preparations for battle.
- (31) Supply gas masks.
- (32) Arrange for providing food and water.

QUARTER BILL

Battle stations and reliefs:

- (1) Captain, conning tower; relief, executive.
- (2) Executive, secondary ship-control station; in direct communication with the captain.
- (3) Gunnery officer, chief fire control (Groups I and II); relief, assistant fire-control officer.
- (4) Navigating officer, primary ship-control station (Group III); relief, designated by the captain.
- (5) Engineer officer, engine rooms (Group IV); relief, next in rank in the engineering department.
- (6) First lieutenant, central station (Group V); relief, designated by the captain.
- (7) Medical officer, primary dressing station (Group VI); relief, next in rank in the medical department.
- (8) Communication officer, conning tower (Group VII); relief, next in rank in the communication department.
- (9) Supply officer, station and relief to be designated by the captain.

(10) **Chaplain**, station whereat he may attend the wounded, to be designated by the captain.

BATTLE ORGANIZATIONS

The quarter bill shall show the grouping of officers and men with their stations and duties in the battle organization as follows, to carry out fleet doctrine and department's policy:

GROUP I

Fire control:

- (1) Keeping gun range during the approach.
- (2) Under all conditions of battle—
 - (a) Successive stations.
 - (b) Direction and control on one target.
 - (c) Division and control on two targets on the same side.
 - (d) Division and control on two targets on opposite sides.
 - (e) Direction and control of torpedo defense battery during a day and night action.
 - (f) Independent turret control.
 - (g) Antiaircraft control, day and night.
- (3) Torpedo control.
- (4) Searchlight and star-shell control.
- (5) Casualties and procedure.
- (6) Launching of aircraft.
- (7) Aircraft spotting.

GROUP II

Armament and ammunition:

- (1) Guns and torpedoes.
- (2) Ammunition supply.
- (3) Gun crews in reserve.

- (4) Gun and torpedo casualties.
- (5) Ordnance repair crew.
- (6) Aloft conning stations; required not only to avoid torpedoes and mines, but also whenever any below-deck steering station has control.

GROUP III

Ship control:

- (1) Successive ship-control stations.
- (2) Successive steering stations; methods of steering.
- (3) Battle lookouts.
- (4) Casualties and procedure.

GROUP IV

Motive machinery and auxiliaries:

- (1) Engines, boilers, and auxiliaries.
- (2) Casualties and procedure.
- (3) Engine force in reserve.
- (4) Engineer repair crew.

GROUP V

Repairs:

- (1) Fire, collision, and damage from torpedo and shell-fire action.
- (2) Water-tight doors closed and those not to be closed.
- (3) Procedure in emergencies as fouling screws; masts, one or both shot away; taking disabled ship in tow, etc.
- (4) In case of damage to hull from collision, torpedo, or shell fire, the first lieutenant shall be prepared to take prompt action to right list and trim as provided in "Instructions for battle conditions" in ships' general information book.

(5) To be in readiness to act in case of damage to hull from collision, torpedo, or shell fire, there should be men stationed in the water-tight subdivisions to report promptly on all damage, the location, and nature, cause and extent of same, and to receive further instructions. In order to accomplish this, there shall be drilled and organized a system of patrols.

(6) There shall be provided in the central station an organization which will cover all matters pertaining to the water-tight integrity; it shall include proper diagrams, charts, or models which can be used in connection with the recording of all casualties and the action taken thereon. The training and drills of personnel for keeping ships afloat on an even keel and for handling hull casualties shall include a study of a water-tight subdivision model of the ship, constructed to scale and available for use and study by all officers and men.

(7) The repair crew will be available for fighting fires, operating valves, shoring bulkheads, stopping leaks, clearing wreckage, repairing electric leads, etc. Portables and tools will be supplied at the repair stations. Tools shall include wrenches, sledges, clamps, crowbars, tackles, shores, pipe cutters, gear for repairing electric leads and apparatus, etc. Stowage at the repair stations should be provided for this gear. The repair crew shall include the rescue breathing apparatus detail.

(8) Water ejection. Use of the air apparatus and pumps for expelling water from the ship.

GROUP VI

Aid to wounded:

- (1) Primary and secondary dressing stations.
- (2) Stretchermen details.
- (3) General instructions.

First-aid appliances include shell-wound dressings and tourniquets. Solutions for the smoke-inflamed eyes of the men at the guns and dressings for burns and scalds in engine and fire rooms, plainly labeled, should be accessible to those stations.

First-aid instructions comprise the following:

(1) Continuous first-aid service to the wounded during battle on the part of the personnel at large. The effectiveness of the service will depend largely upon the thoroughness with which the units have been previously instructed by the medical and division officers, as required under the regulations, and how well they have become imbued with the principle that first aid, calmly administered by their comrades, represents the maximum service that can be rendered the wounded during the height of a naval action. The ship's force should have been warned that elaborate measures of treatment or extensive transportation during battle are both inadvisable and impracticable. The wounded man, after the administration of first aid, should be placed to one side, where his presence will be least felt and where he will not incommode or disturb the fighting force.

(2) In a suspension or lull of battle when prompt treatment of the wounded at or near the battle stations is impossible, the stretchermen shall be required to seek out the wounded, to afford them relief, to transport them to the battle dressing stations, and to prepare a list of the killed. It should be the first duty of the medical officer to give attention to those whose services can be restored. These men should be promptly returned to their stations. It must be borne in mind that the primary purpose of first aid is to keep as many effectives at their stations as possible.

(3) Routes to dressing stations should be indicated by an arrow and a red cross. There should be at least two dressing stations—a primary station and a secondary station. These stations should have an abundant supply of drinking water, all connections being behind armor. Storage tanks for drinking water should be provided, having a capacity sufficient to furnish in first class 1 gallon of water per man, allowing for 20 per cent of wounded. Dressing stations should also be well ventilated, well lighted, and as cool as the surroundings will permit. It has been estimated that for each 36 square feet of area one cargo light of approximately 200 candlepower (six lamps) should be provided. Lanterns and electric bull's-eyes should be available in case the battle circuits suffer interruption. Electric or steam connections should be provided for the sterilizers. Sterilizers should be removed from the surgical operating room and set up in the primary dressing station prior to action. There should be some provision made for the drainage of this space. In the vicinity of the dressing station or adjoining it there should be arranged a berthing space for the wounded sufficient to accommodate about 10 per cent of the complement. This space should be easy of access to the dressing station, and, like the latter, have an abundant air supply. In addition to the usual equipment transferred from the sick bay and operating room and distributed in the dressing stations, the following articles should be provided: Electric fans with proper connection, half tubs, water buckets, swab and brooms, washing stands, tables for apparatus, shelves, supports or hooks for irrigators, etc., battle dressing lockers, bedding for the berthing space of the wounded, restoratives, etc. A reserve supply of surgical dressing

should be available on this deck in a secondary station behind armor and accessible for distribution to the dressing stations.

(4) The station of the medical officer of the ship during battle shall be, as a rule, at the primary (operating) dressing station, where he shall see the necessary equipment for operations and dressing is provided.

(5) Means of identification of the killed as required by Article XVII of the Tenth Hague Convention should be provided for each officer and man.

(6) Apparatus for transporting the wounded will be provided for by the medical department of the ship. Simple measures designed to facilitate transporting the wounded by stretcher into boats or directly to the dressing stations by the most convenient hatch, down which they will be lowered or passed by hand to the deck below, are to be preferred to more elaborate means.

(7) A fighting ship should be cleared of wounded as soon as possible.

TRAINING AT BATTLE STATION

The battle exercises are not to be considered as periods of training so much as test of training. The above groups shall receive their battle training independently.

FINAL PREPARATIONS FOR BATTLE

These shall be made when battle is imminent, or when standing by in thick weather, or before sunset. In daylight the call to general quarters is the signal for final preparations. Circumstances will govern in the case of certain final preparations. At night the guns must be kept cleared and manned by the watch. The extent to which men off watch may turn in hammocks will depend on circumstances.

GENERAL QUARTERS

Definition.—General quarters calls the ship's company to stations.

GENERAL DUTIES

Man battery and take battle stations.

Load torpedoes.

Connect fire hose.

Stand by manifolds and valves.

Stand by cut-out switches and switchboards.

Test out all gear.

NOTE.—Every officer and man must occupy his battle station at general quarters. Fleet working parties and ship work and boating must give way to general quarters routine.

THE CALLS

(7) **General quarters signals:**

(a) General alarm.

(b) General quarters on the bugle (call No. 29).

(c) General quarters over interior communication system.

(2) **Secure signals:**

(a) Secure on the bugle.

(b) Secure over the interior communication system.

REPORTS

(1) **Ready** (to be made over fire-control and interior communication system):

(a) Gun divisions, fire-control division, and torpedo division report to chief fire control.

(b) Ship control and signal crews report to navigating officer.

(c) Engineering department, medical department and repair crews report to central station.

- (d) Chief fire control, navigating officer, and central station report to executive.
- (e) Executive report to captain.
- (2) **Secure:**
- (a) Heads of departments report to executive.
- (b) Executive report to captain.

THE EXERCISE

(1) Thorough preparation shall be made for every general quarters exercise, and a definite program shall be drawn up and followed at this drill, during which casualties shall be simulated.

(2) The training of units of the battle organization and gun crew should not be attempted at general quarters except to simulate casualties to personnel and material. Gun crews and other units are expected to be expert before the ship goes into action, and they should be brought to thorough proficiency before seriously taking up the problems of general quarters.

(3) The action taken on each casualty shall be investigated. Casualties shall be given in such manner and at such time as to closely approximate a real casualty. The patrol and communication system of the ship must be used in all lower-deck casualty drills to determine, first, that there is a casualty; second, to insure a prompt, accurate report to central; and, third, that the proper action is taken to handle the casualty. Great thought and care must be exercised to introduce all possible conditions which exist with each casualty—for example, a shell bursting on second deck. All the probable damages due to the burst should be simulated.

(4) All vessels should provide in organization for the details and necessary action to be taken to safe-

guard personnel from explosive or poisonous gases. A standard form of signal for gas alarm should be installed and used for no other purpose. At this alarm all personnel should put on gas masks in accordance with instructions which may be issued from time to time by the department. These masks should be stowed in such a place that they may be manned quickly and yet be free from the destructive effects of shell burst.

Necessary measures must be provided for to prevent the inflow of gases to the vitals of the ship through the ventilating system. Under present conditions all compartments below must receive adequate notice of gases and immediately use gas masks.

At least once a month there should be periodical instruction given to the personnel regarding gas, the different kinds of gas, how detected, the danger of same, and the action to be taken under all circumstances. Inasmuch as there are possibilities of using gas bombs from aerial planes, it is of equal importance to provide for the gas protection of all gunnery personnel stationed in the tops, conning tower, or upper decks. Inasmuch as such personnel can best observe the enemy's shell bursts, it is recommended that special trained lookouts be designated to observe gas shells and report when the gas alarm should be sounded. As it is well known, in the World War the gas alarm in the trenches had to be obeyed instantly, and in some cases, where mustard gas was used at the beginning, too little heed was paid to protect against this method of warfare. Therefore in case of doubt it is best to sound the gas alarm and all hands wear gas masks. The work of personnel in peace-time training should be carried on under conditions simulating a gas attack. Gas defense is discussed in chapter 6, *Ship and Gunnery Drill, 1927*.

CHAPTER 27

SUBJECT J.—REGULATIONS IN REGARD TO UNIFORM AND CLOTHING

MARKING CLOTHES

Every article of clothing shall be legibly marked with the owner's name, using black paint in marking white clothes and white on blue clothes. The manner of marking is explained fully on page 13.

UNIFORM AND REGULATIONS RELATING THERETO

(a) **Prescribed outfit for men.**—The minimum outfit of clothing, etc., for enlisted men at sea shall be as given in the following table. On shore and in the Tropics, the outfit of clothing may be reduced at the discretion of the senior officer present.

PRESCRIBED OUTFIT

Outfit	Chief petty officers	Officers' stewards and cooks	All other enlisted men
Blankets, pair.....	1	1	1
Broom, whisk.....	1	1	1
Blacking outfit.....	1	1	1
Brush, scrub.....			1
Brush, tooth.....	1	1	1
Brush, hair.....	1	1	1
Caps, complete.....	2	2	1
Cap, covers, blue and white.....	1	1	
Cap, watch.....			1
Clothes stops, package.....			3
Coats, blue.....	2	2	
Coats, white.....	4	4	
Comb, hair.....	1	1	1
Cravat.....	1	1	

PRESCRIBED OUTFIT—Continued

Outfit	Chief petty officers	Officers' stewards and cooks	All other enlisted men
Drawers, heavy.....	2	2	2
Drawers, light or medium.....	4	4	4
Dungarees, suit.....	2	—	2
Gloves, pair.....	1	1	1
Handkerchiefs.....	12	12	12
Hats, white (or white hats).....	—	—	3
Jacket, white (officers' mess attendants only).....	—	4	—
Jackknife.....	1	—	1
Jumpers, undress blue.....	—	—	2
Jumpers, dress white.....	—	—	1
Jumpers, undress white.....	—	—	3
Jersey.....	—	—	1
Leggings, pair.....	1	1	1
Mattress.....	1	1	1
Mattress covers.....	2	2	2
Neckerchief.....	—	—	1
Overcoat.....	1	1	1
Overshirt.....	—	—	1
Pillow.....	1	1	1
Pillow covers.....	2	2	2
Raincoat.....	1	1	1
Rating badges (as required by petty officer).....	—	—	—
Sewing kit, as required.....	1	1	1
Shirts, flannel.....	2	2	—
Shirts, white.....	6	6	—
Shoes, pair.....	2	2	2
Shoes, gymnasium (as required).....	—	—	—
Socks, cotton.....	4	4	4
Socks, woolen.....	2	2	2
Specialty marks (as required).....	—	—	—
Toilet articles, outfit.....	1	1	1
Towels.....	2	2	2
Trousers, blue.....	2	2	2
Trousers, white.....	4	4	4
Undershirts, heavy.....	2	2	2
Undershirts, light or medium.....	4	4	4
Waistcoat.....	1	1	—

(b) A man may own more clothing than the outfit requires, provided he desires to do so, that it is of authorized pattern, and that it is conveniently stowed.

(c) In the event of men who have not sufficient pay due them to entitle them to draw clothing or small stores, the captain may, in case of urgent need, direct

such articles as he considers absolutely necessary to be supplied.

(*d*) **Uniform clothing.**—Men are required to provide themselves with correct uniforms as laid down by the Uniform Regulations, United States Navy. This includes all uniforms, insignia, devices of their rating, and all medals or orders. The uniform, with its various insignia and devices is designed primarily to indicate on sight those belonging to the naval service; to show at a glance their rating, and hence the authority and responsibility imposed by law upon those wearing it. It should be a matter of pride with men in the naval service to be habitually neatly and smartly dressed and to see that their uniforms are scrupulously clean. There is no question but that those who are properly and smartly dressed at once create a far better impression than those who fail in this respect or who wear ill-fitting or stained clothes.

(*e*) Enlisted men are not allowed to have civilian clothing in their possession on board ship. They shall not wear civilian clothing ashore in a foreign port, but may be granted such permission when on leave in a home port. No part of the uniform can be worn at the same time as civilian clothes, except overcoat, raincoat, jersey, underclothing, gloves, and shoes. When on duty or when on shore in a foreign port, enlisted men of the Navy or Marine Corps shall wear the prescribed uniform, whether serving on shore or float.

UNIFORM OF THE DAY

(*a*) The uniform to be worn for the season, day, or occasion is prescribed by the senior officer present.

(*b*) In the fleet the uniform of the day prescribed by the senior officer present is worn by all petty officers.

signalmen, and others on watch above decks and by all boats' crews; by all persons above decks at "all hands" when going in or out of port; and generally by men above decks and in common living spaces; but commanding officers may prescribe or permit working dress for other persons as may be most suitable to the exercise of duty of the ship at the time.

(c) A dress board, on which will be indicated the uniform of the day for the crew, is kept posted in a conspicuous place.

(d) When embarked on Army transports, those of the naval service wear the uniform prescribed by the senior line officer or marine line officer embarked. The prescribed uniform as far as practicable conforms to that prescribed by the officer commanding the troops embarked.

EXCEPTIONS TO REGULAR UNIFORM OF THE DAY

(a) Cooks at work in the galleys wear white undress, without neckerchiefs, and white aprons. When not on duty there, they shall wear the uniform of the day. Messmen while performing their duties as such wear white undress, without neckerchiefs (marines, the corresponding uniform), and they may wear this uniform any time below decks, but at quarters and off duty they wear the uniform of the day. Mess attendants on board ship wear the white jacket, with white or blue trousers, according to the prescribed uniform of the day. When leaving the ship, they wear the same uniform as other enlisted men.

(b) In warm weather at sea, or in port, chief petty officers who may be engaged in work which might stain, soil, or wet their clothing may be permitted to remove their coats.

(c) At and in isolated anchorages for target practice or similar service, when hot weather or other conditions render it desirable, the uniform of the day for enlisted men may be modified by omitting the jumper, chief petty officers leaving off the coat and wearing shirts, with belts instead of suspenders for the trousers. This uniform will be indicated by signal. Jumpers will be resumed at the supper hour. All cooks, mess attendants, members of the guard, and persons that have occasion to enter officers' quarters shall not wear this uniform, and running boats' crews will be exempted unless otherwise especially directed. A morning signal fixing the uniform the same as the day before will not apply to this variation; a new signal will be required for each day.

(d) The foul-weather clothing and raincoats may be worn as circumstances warrant.

(e) **Dungarees.**—Dungarees of the prescribed pattern may be worn by enlisted men when engaged in work which by reason of its nature would soil their other uniforms. This pertains more particularly to those in the engineers' force; to artisans and mechanics; to the deck force when scaling or painting ship or handling stores; to the crews of repair, supply, and fuel ships during working hours or when handling stores or fuel; and to the crews of submarines when under way or during working hours in port, and to the aviation force at shore stations when overhauling, repairing aircraft, or engaged in their maintenance or upkeep. In no case should this be interpreted to apply to those off duty, to men when not engaged in work which might soil their other uniforms, nor as a regular uniform of the day. It is prescribed for those on watch, on duty, or while so engaged in the above-men-

tioned cases of work, and at all other times everyone must conform to the regular uniform of the day. In no case in entering or leaving port are dungarees allowed on the upper decks nor worn by any others than those on watch in the engineers' department; nor in port at any time other than by those who are actually required to do so; nor by anyone at shore stations except at their places of work or in going to and from such places from their quarters. No other than regular uniform dungarees are allowed.

(f) Blue shirts with soft blue turned-down collars may be worn when prescribed by the senior officer present.

SIDE ARMS, LEGGINGS, ETC.

(a) Leggings are worn by enlisted men of the Navy with any form of dress when under arms for parade or ceremony, or infantry or artillery drill, or a landing party, or on guard detail, or when on duty ashore as patrol or beachmaster's guard, or as mail orderly. With leggings, high black shoes are worn by enlisted men. Trousers will be rolled tightly against the leg and neatly tucked inside the leggings. Under no circumstances should trousers be pulled out and allowed to bag down over the tops of the leggings.

(b) When the revolver is carried, the belt shall be worn outside of every coat, including the overcoat, the revolver being worn slightly in front of the right hip. The cartridge attachment worn with the cartridge belt shall be worn in front and to the right and left of the belt buckle. If only one cartridge attachment is worn, it shall be to the right of the buckle.

(c) A petty officer on boat duty, in charge of guard boat, or on other special duty shall wear the service

revolver belt, but this provision shall not apply to the coxswain of a boat unless the crew of the boat is armed.

(d) Men wearing side arms shall not remove their caps or other head covering except indoors.

PINS AND JEWELRY

No watch chains, fobs, pins, or other jewelry shall be worn exposed upon the uniform by enlisted men in the Navy or Marine Corps, except sleeve buttons and shirt studs, as prescribed, and authorized decorations, medals, ribbons, and honorable-discharge buttons.

THE HAIR AND BEARD

The hair, beard, and mustache shall be worn neatly trimmed. The face shall be kept clean shaved, except that a mustache or beard and mustache may be worn at discretion. No eccentricities in the manner of wearing the hair, beard, or mustache are allowed.

GENEVA-CROSS BRASSARD AND SICK-LIST BADGE

(a) The Geneva-cross brassard shall consist of a band of white cotton bearing a red Geneva cross painted or stitched on the band, to be fastened around the upper part of the right arm over the outer garment. The band shall be 4 inches wide, the cross 3 inches in height and width, and the arms of the cross 1 inch wide. It is worn by the ambulance and first-aid parties.

RAIN CLOTHING

(a) Two types of rain clothing are prescribed for men—foul-weather clothing (oilskins, boots, and sou'westers) and light raincoats.

(b) The foul-weather clothing as prescribed and issued to ships as equipment, with or without rubber boots, may be worn by men in foul weather, at sea, or in port, including getting under way and coming to anchor, and also by whole boats' crews, unless specially ordered not to be worn. When the weather is too cold to go barefoot, men may wear rubber boots during wet weather or while washing down the deck, but rubber boots alone shall not be worn by the crews of power boats.

(c) The raincoats specified for men are not designed for heavy-weather service, but for inclement weather, as when going from shelter to shelter, or liberty, and like service.

LAWS AFFECTING THE UNIFORM

(a) The following are acts of Congress with reference to discrimination against persons lawfully wearing the uniform and with reference to the unlawful wearing of the uniform:

(b) "That hereafter no proprietor, manager, or employee of a theater or other public place of entertainment or amusement in the District of Columbia, or in any Territory, the District of Alaska, or insular possession of the United States, shall make, or cause to be made, any discrimination against any person lawfully wearing the uniform of the Army, Navy, Revenue Cutter Service, or Marine Corps of the United States because of that uniform, and any person making or causing to be made such discrimination shall be guilty of a misdemeanor, punishable by a fine not exceeding \$500." (Act Mar. 1, 1911 (36 Stat. L. 963, 964).) (For information as to various State laws, the statutes of the various States should be consulted.)

(c) Section 125 of the act of Congress approved June 3, 1916, made it unlawful for any person not an officer or enlisted man of the United States Army, Navy, or Marine Corps to wear the duly prescribed uniform of the Army, Navy, or Marine Corps, or any distinctive part of such uniform, or a uniform any part of which is similar to a distinctive part of the uniform, excepting the National Guard and certain other specified organizations, societies, and individuals. This act was further amended by section 8 of the act of June 4, 1920, to include societies specified by the Secretary of the Navy.

(d) Enrolled members of the Naval Reserve when in active service shall be subject to the laws, regulations, and orders for the government of the regular Navy, and the Secretary of the Navy may, in his discretion, permit the members of the Naval Reserve to wear the uniform of their respective ranks, grades, or ratings while not in active service, and such members shall for any act committed by them while wearing the uniform of their respective ranks, grades, or ratings be subject to the laws, regulations, and orders for the government of the regular Navy. (Act of July 1, 1918.)

NECKERCHIEFS

Boatswains' mates, quartermasters, guard petty officers and other petty officers on watch, mail orderlies, buglers, messengers, side boys, sentries, men on guard or patrol duty, and the coxswains of all boats shall wear the neckerchief with undress, blue and white, except on occasions when prescribed. Bodies of men under arms, including their petty officers, shall not wear neckerchiefs with undress, except the guard.

LASHING HAMMOCKS

The hammock lashing is a piece of 12-thread manila rope, one end of which is eye spliced and the other end whipped. Lay blankets in a neat fold in center of mattress; draw edge of hammock together; see that skin of hammock is smooth. Haul taut the loop of the lashing around the head of the hammock; have no bedding showing. Counting this as first turn, take seven turns with marline hitches at equal distances apart. After the seventh or foot turn, similarly taken around the end of the hammock, without bedding showing, take round turn about foot and expend end by neatly tucking along belly of hammock. All turns should be taut and the hammock stiff with a smooth skin. Unhook one end, and with hammock held under the arm, off the deck, twist clews well and tuck neatly under lashing along belly, hauling taut and beating end of hammock well down. Proceed in same manner with the other end, then stow hammock in netting. Hammocks should be inspected by a petty officer of the division. If they are improperly lashed, men should be made to relash them. Each division has a netting in which its hammocks are invariably stowed. The hammock stower is called 10 minutes before reveille and should be in the netting at reveille to arrange the hammocks left in the netting in the desired order and to receive the hammocks of the men who have turned out early. Such men may bring their hammocks up for stowing immediately after reveille is sounded. The anchor watch should roll back the hammock cloths before reveille. Men with hammocks properly lashed go to their nettings and pass the hammocks to the stower, who

stows them with their numbers up and out. On some ships hammock stowers are petty officers detailed by division officers. In this case the hammock stowers require the men to stow their hammocks properly.

All clothing before stowing in bag is folded and stopped as described on page 17.

Stowing clothes, laying out bags for inspection, airing bedding, hammock inspection, and stopping on wash clothes, bags, and hammocks are described on pages 17-25.

REQUISITIONS FOR CLOTHING

(a) Each ship has a schedule of days on which various divisions may draw clothing. On these days the men will draw blank requisitions from their division petty officers, fill them out for the clothing they desire, and turn them in to their division officer for approval. The division officer will then sign these requisitions and turn them over to the supply officer. At the hour specified the men will go to the small-store issuing room and draw the clothing as approved on their requisitions. The storekeeper who issues this clothing will make out a small-store slip in duplicate, showing the price of each item and the total cost of all the clothes drawn. The original will be turned over to the supply officer, who will deduct this amount from the pay of the man, and the duplicate is given to the man for his information.

(b) Men who are in debt to the Government due to sentence of court-martial or other causes can draw clothing only on approval of the commanding officer and then only on account of necessity for health and comfort. These men make out their requisitions and

submit them to the division officer as the others, but must explain that they are for their health and comfort. After approval by the division officer, these requisitions are sent to the executive officer for transmission to the commanding officer.

(c) Division officers inspect all articles of uniform drawn by their men for proper fit. Minor alterations for proper fitting are made by the ship's tailors at moderate cost. In case of bad-fitting clothes the division officer directs the man to turn them in for better-fitting clothes. After inspection by the division officer, the men are directed to mark their clothes in accordance with regulations.

CARE OF CLOTHING

(The following notes are taken from "A Handbook on the Care of Uniforms," published by Officers' Uniform Shop)

General care.—No matter how well fitting a uniform, and especially the coat, is when new, it will not continue to look its best or keep its shape unless it is carefully put on and kept buttoned. The carrying of large or heavy objects in the pockets will speedily destroy the shape of the coat. Uniforms should always be kept on hangers when not in use.

To fold a coat.—Spread it out, lining down, on a table and turn up the collar. Straighten out the sleeves and fold each side from the lapel notch, bringing lower corners to center seam. Fold the coat over once on center seam. If container will not allow coat to be packed at its full length, turn the sleeves up at the elbow before folding the coat.

To prevent moths.—Frequent brushing and exposure to sunshine and fresh air will effectually prevent moths.

If uniforms are to be put away for a long time and left undisturbed, pack away with camphor balls, cedar wood, or balls of cotton saturated with turpentine.

To remove oil or grease from blue uniforms.—Soak a piece of blue cloth in chloroform, petroleum, benzine, benzol, or acetone and rub the spot briskly. The stain will be washed out. The solvent will be rapidly evaporated.

To remove kerosene.—Wash in a solution of warm soapy water.

To remove stains from blue uniforms.—Paint stains will be removed in a similar manner as given above for oil or grease while paint stains are still fresh. Old and hard paint stains are difficult to remove and sometimes impossible. The best treatment for old paint stains is to rub them hard with a piece of blue cloth saturated in turpentine.

Paraffin, wax, etc.—Place blotting paper over spot and apply hot iron to the blotting paper. Continue this, using clean blotting paper, until the spot is removed.

Iodine stains can be readily removed by applying a solution of "hypo" used in photography, also called "antichlor" or sodium hyposulphite, and then rinse thoroughly with water. It may also be removed by using starch as prepared for laundry purposes. Immerse the stained part in the starch and boil; it first turns blue and then disappears.

Chocolate.—Cover stain with borax and wash with cold water, then pour boiling water on the stain and rub vigorously between the hands. When dry, sponge with a little naphtha, chloroform, or benzine.

To remove rust, ink, or fruit stains from white uniforms.—Soak the stained part in a strong solution of

oxalic acid, or put some powdered oxalic acid or sodium or potassium acid oxalate on the stain previously moistened with water and rub with a piece of white cotton or linen. The stain will dissolve and can be washed out with water. Oxalic acid and its soluble salts are very poisonous, and care should be taken in handling them.

Care of gold lace.—Gold lace will rapidly tarnish and deteriorate if in contact with or hung near any substance containing sulphur, such as rubber or ordinary manila and kraft wrapping paper.

To remove tarnish from gold lace.—Gold lace may be cleaned by dipping in solution of potassium cyanide and rinsing thoroughly with water. The use of potassium cyanide is very dangerous, as it is a powerful poison, and extreme care must be exercised. Never under any circumstances use it when hands bear cuts or scratches.

Mildew.—If stain is recent simply use cold water. If it is an old stain, bleach.

To clean buttons that have turned green.—Buttons sometimes turn green when the gold plate is worn off and the copper base becomes covered with green copper carbonate due to exposure to moist air. This can be removed by rubbing gently with acetic acid or any substance containing this acid, such as vinegar or Worcestershire sauce, followed by a thorough washing in fresh water and drying.

To remove shine from serge uniforms.—The spot to be treated should be steamed by laying a wet cloth over it and pressing with a hot iron and then rubbing very gently with a piece of 00 sandpaper or emery cloth. This had best be done by a regular tailor.

To repair a clean cut in a serge or cloth uniform.—A clean cut in a serge or cloth uniform can be repaired by being rewoven with threads drawn from the material in another part of the garment. This must be done by a regular tailor. This process is rather expensive, but a cut so repaired can not be detected after being rewoven.

To remove a singe mark.—A light singe mark on blue serge or cloth should be rubbed vigorously with the flat side of a silver coin. This will in many cases make great improvement in appearance. It is, however, not effective in the cases of bad singes or scorches.

Cap devices.—These and other embroidered insignia may be kept new and bright by scrubbing them occasionally with a nail brush and ammonia which has been diluted with water. This should be done as soon as there is any signs of tarnishing or corrosion. If the latter has been allowed to continue, or after it has gained a strong hold, the device can not be restored to its original condition. Buttons may be cleaned in the same way.

ISSUE OF FRESH WATER

Each ship has a schedule for drawing fresh water. In general, fresh water is issued every morning at turn to, at 11.30 a. m., and at 4.30 p. m. Fresh water can be drawn at other times only by permission of the officer of the deck. All men must learn to conserve fresh water as much as possible, as it is obtained at great expense on board ship. All the fresh water used in the boilers is made aboard ship by the evaporators from sea water. The fresh water for drinking, etc., is also made by the evaporators, but this is sometimes

obtained from water barges in ports where good water can be obtained more cheaply than it can be made. The capacity of the fresh-water tanks aboard ship and the capacity of the evaporators are limited, and it is only by close cooperation of all hands that an adequate supply of fresh water can be maintained. Careless use or wastage of fresh water must be stopped.

CHAPTER 28

SUBJECT K.—PERSONAL HYGIENE AND FIRST AID

PERSONAL CLEANLINESS; ELEMENTARY RULES OF HYGIENE; PROPHYLAXIS; ELEMENTARY FIRST AID; TREATMENT AND TRANSPORTATION OF THE WOUNDED IN ACTION; TYPHOID PROPHYLAXIS

1. Personal cleanliness; elementary rules of hygiene; prophylaxis.—So much sickness and suffering is caused by ignorance of the simplest matters pertaining to personal hygiene and it is so easy to learn the fundamental rules necessary to preserve health that every man should study and follow the advice given herewith.

(a) *Personal hygiene*.—Personal hygiene teaches us to keep both our minds and bodies healthy. Improper thinking, where men allow their minds to ponder over filthy subjects or immoral subjects, will eventually cause an unsound mind. It is easy for the mind to form a habit, even as other habits are formed, and improper thinking is sure to form a habit of mind which will drive one down to the depths of degradation. By keeping the mind occupied in the work assigned you, by taking an interest in professional studies, by athletics and clean recreation, and by reading good books, you can develop your mind in a healthy manner. Smoking to excess, drinking the dangerous boot-leg liquor, and bad women will ruin your bodily health quicker than anything else. Bad women especially are the cause of more grief than anything else, as

promiscuous intercourse with them always results in loathsome diseases which not only often leave their effects on your system the rest of your life, but also are transferred by you to your future family with disastrous results. A large percentage of all idiots, blind, and deformed people in this world is traceable to the improper conduct of the father, probably many years before he married. Sexual intercourse is positively not necessary for health and proper manly development. In spite of warning, if you have exposed yourself to venereal disease, you must report to the sick bay for treatment. The sooner you do this the better, as the germs multiply rapidly, and in a few hours after exposure the prophylactic treatment will be ineffective. However, prophylactic treatment is not a sure preventive. The only sure way is to avoid bad women entirely.

NOTE.—The development of a venereal disease when the records of the sick bay show that the man had not taken the prophylactic treatment is an offense that is subject to disciplinary action.

(b) *Personal cleanliness*.—It is possible to tell at a glance whether a man observes the rules of personal hygiene by the appearance of his hair, his face, his teeth, his clothing, his hammock, and his general bearing. The hair and beard must be kept trimmed in the regulation manner. The teeth must be brushed twice a day and kept in good condition by a visit to the dentist at least once every six months. Clothes must be kept clean and only clean clothes worn after working hours or drill. Baths must be taken frequently, especially after strenuous work or drills, and clean underwear put on. The best type of bath is the shower, as it is the most sanitary. Hands must be kept clean,

and especially the finger nails. Mattress covers should be changed twice a week, as dirty bedding gives off noxious odors which are poisonous and unhealthy. Personal cleanliness is especially necessary aboard ship, as men live so closely together that infectious diseases can be spread rapidly to many men in a short time, and infectious diseases thrive whenever personal cleanliness is not carefully maintained.

(c) *Care of the body.*—(1) Food must be chewed properly in order that it may be ground and mixed with saliva in a proper manner for digestion in the stomach and intestines. Eating rapidly and bolting the food causes indigestion and may develop ulcers of the stomach or even cancer.

(2) Feet should be bathed at least once a day; cold water hardens them, while hot water softens them. Clean, dry socks that do not wrinkle should be worn at all times. The nails should be cut straight across and kept trimmed close. Corns should be treated at once, preferably in the sick bay, as otherwise they will give trouble. If corns can not be treated in the sick bay, get corn remover from the sick bay, soak feet in hot water, and scrape off corn. Blisters should be treated at the sick bay without delay, as they may become infected and cause you to be laid up. Do not delay reporting to the sick bay for any trouble with your feet.

(3) It is well to have two or even three pairs of shoes and wear them in rotation, as it gives them a chance to dry out after being dampened by the perspiration from the feet. No two pairs of shoes make pressure equally on the same part of the feet; therefore, by changing shoes you rest and allow to heal parts of the feet that have been rubbed or subjected

to undue pressure. Blisters can often be avoided in this way. Do not dry shoes too rapidly, as this causes the leather to become hard and leads to blisters and corns.

(4) We usually catch colds because we neglect to put on a sweater or overcoat after being overheated by hard work, or when going from a hot compartment out into the cold air, or when sleeping in a draft without sufficient covering. Never sit in a draft to cool off when perspiring, as the evaporation of the perspiration will cause chills and may cause pneumonia to develop. Take a bath as soon as possible and shift into dry, clean clothes. If you work in the rain and get wet keep moving until you have a chance to take a bath and shift clothes.

Some of the more important principles of personal hygiene may be summed up as follows:

1. A daily cold bath followed by a brisk rub is beneficial to health.
2. The hands should be washed before each meal, and immediately after using the toilet.
3. Teeth should be brushed at least once a day, especially at night.
4. Exposure to venereal disease should be avoided; but if exposed, wash parts immediately with soap and water, then use prophylactic treatment.
5. Intemperance in eating and drinking should be avoided. Men who drink alcoholic liquor are more apt to get sick than those who abstain.
6. Daily exercise is conducive to health.
7. Periods of work should be followed by periods of relaxation, rest, or recreation.
8. Sufficient time should be allowed for meals; the food should be chewed thoroughly.

9. Bedding should be aired as often as practicable. Sunlight kills disease germs.

10. The hair should be kept short and the finger nails trimmed and clean.

11. Contact with the sick should be avoided unless duty requires it.

12. The tent should be "ditched" as soon as possible even if the camp is only for one night. A little rain may spoil a whole night's rest.

13. Plenty of water should be drunk, but do not drink a large amount at any one time, especially when overheated.

14. Cold-drink stands and restaurants should be avoided unless they have been inspected and approved by the sanitary officer.

15. Underclothes, shirts, and socks should be clean. This is especially important before going into battle, as soiled clothes predispose to wound infection.

16. The mental attitude has a close relationship to health. Worrying and anxiety over trifles should be avoided—to accomplish this the mind should be kept occupied, and interest maintained in work and recreation.

ELEMENTARY FIRST AID

[From Landing Force Manual, 1927]

Knowledge of first aid.—It is the duty of every man to familiarize himself with the details of first aid, so that he may be able to give efficient help to wounded comrades, and, in case of necessity, direct or assist in efforts made in his own behalf. By first aid is meant the measures that should be employed in the immediate treatment of gunshot wounds and various accidents and emergencies.

Efficiency in first aid can be attained only by thorough drilling. In order to save life, some one on the spot must be able to render assistance to the apparently drowned or suffocated, and to those suffering from severe hemorrhage (bleeding).

Wound infection.—One of the important duties of those behind and on the firing line is to prevent wound infection. This is accomplished in part by the men being so well trained in first-aid methods and how to apply first-aid dressings that they can intelligently treat not only their own wounds but those of their comrades. The measures for preventing wound infection are extremely simple and are effective in saving life, preventing suffering, and in hastening recovery.

Handling the wounded.—Men should be instructed in the proper methods of handling the wounded and in the various ways of improvising splints and litters.

REMOVAL OF FOREIGN BODIES

Foreign bodies in the eye usually lodge on the inner surface of the upper lid. If on the eye ball or on the lower lid they may be removed with the end of a toothpick or match wrapped with cotton, or a clean bit of cloth, or with the corner of a clean handkerchief. If on the inner surface of the upper lid, the lid should be turned back in order to detect the foreign body. To do this, tell the patient to look down, press a match, pencil, or the edge of a finger, across the upper lid, half an inch above its edge, at the same time taking hold of the lashes and turning the lid up. Remove the foreign body with the angle of a card or a twist of cotton on the end of a toothpick. (Figs. 95 and 96.) If available, a few drops of boric-acid solution will relieve irritation.

If the foreign body is embedded in the eye, a doctor's services should be obtained as promptly as practicable.

If the foreign body can not be removed, or when there is other injury to the eye, it should be covered with a dressing soaked in cold boric-acid solution or cold water to prevent further injury which might result from rubbing or movement of the lids.

Lime or lye should be washed out with boric-acid solution or clean water and then the eye should be washed with a solution of vinegar, one teaspoon to a cup of warm water, followed by castor or sweet oil.

Acid in the eye should be washed out with boric-acid solution, clean water, or with lime water followed by castor or sweet oil.



FIG. 95.—The upper eyelid turned back

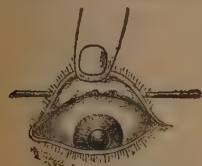


FIG. 96.—Method of turned back

Foreign bodies in the ear, including insects, are best removed by gentle syringing with warm water (if a syringe is available) or by pouring water into the ear. Toothpicks, matches, etc., should not be used, as serious injury to the ear may result. If the foreign body is not easily removed summon a doctor. Water should not be used to remove objects which might swell in the ear.

Bites and stings of insects.—(1) Extract the sting if possible; squeeze the part lightly, which will expel some of the poison. Pressure made with the barrel of a hollow key is excellent for this purpose. Then apply ammonia water, wet salt, or cold applications.

(2) The stings and bites of poisonous spiders, tarantulas, scorpions, and centipedes often make their victims very ill, but rarely are any of them fatal in their effects. Circulation should be cut off with a string or tourniquet as in treating snake bite and the wound strongly sucked until the part is free of poison; then apply ammonia water and cold wet applications.

Ivy or sumac poisoning.—This form of poisoning is quite common. It is a local irritation and inflammation of the skin caused by contact with the leaves of the poisonous plant. Within a few hours there is a reddening and itching of the skin, which becomes inflamed and swollen, blisters, and even pustules often developing.

Treatment.—First scrub the part coming into contact with the ivy or sumac with soap and water to remove the poison. If available, a 4 per cent solution of ferric chloride in equal parts of glycerine and water is an excellent wash and should be applied to all exposed surfaces. A solution of ferrous sulphate in water is just as effective. This treatment is a preventive measure if used before going in woods where poison ivy or oak grows.

After the skin inflammation has developed, the parts should be washed each day with limewater or boric-acid solution and then zinc oxide ointment, carbolized vaseline, or a solution of Epsom salts applied.

Snake bites.—The poisonous snakes of North America, except the coral snake, belong to the pit-viper family, which includes rattlesnakes, copperheads, and water

moccasins. These snakes have a pit or depression between the eyes and nostril, which readily identifies them. Their heads are heart shaped, bodies thick, and their teeth are arranged in two rows. Outside of the teeth in the front part of the upper jaw are two fangs, one on each side. Fangs are characteristic of poisonous snakes everywhere. If the bite shows wounds from two rows of teeth and two fangs (see fig. 98), it is that of a poisonous snake. A single puncture usually means a fang prick. The teeth in the nonpoisonous snakes are arranged in four rows and the bite shows four punctures. (See fig. 97.)

The bite of a poisonous snake causes great pain, attended by rapid swelling, much depression, and weakness, and followed quickly by death in some cases unless treatment is promptly given.



FIG. 97



FIG. 98

Treatment.—In every case of snake bite proceed as follows, unless the snake is known to be of a harmless type: If the bite is on one of the extremities, the limb should be immediately encircled between the wound and the heart with a tourniquet; anything will do which will prevent the poison from reaching the body—a string, a handkerchief or bandage, a belt or a piece of cloth torn from the clothing. If a knife is available, make several criss-cross cuts through the bite and then suck the wound thoroughly, spitting out the blood and poison from time to time. Men going into country where snakes are liable to be encountered should carry

a bottle of crystals of potassium permanganate. These should be rubbed into the wound made by cutting into fang holes and will oxidize the poison. A solution of potassium permanganate injected with a hypodermic syringe around the bite may prevent the poison from being absorbed by the system. Even though potassium permanganate is used, the rest of the treatment should be carried out. After about a half hour the tourniquet should be slightly loosened so that the circulation in the limb may be reestablished. This will let some of the poison into the circulation, and the tourniquet should be tightened again at once. Watch the patient for serious depression and weakness. This operation may be repeated in a few moments if there are no ill effects. Give aromatic spirits of ammonia, beef extract, coffee, or tea to stimulate patient.

BURNS AND SCALDS, SUNSTROKE, HEAT EXHAUSTION, FROST-BITE, AND FREEZING

Burns.—(1) A burn is the local effect of dry heat such as flame, hot metal, electric current, etc.

(2) Scalds are due to moist heat such as hot water or steam.

(3) There are three degrees of burns—first degree, a mere reddening of the skin; second degree, the formation of blisters (these two degrees of burns are not followed by scarring, and unless one-sixth of the body surface is involved recovery may be looked for); third degree, charring and destruction of the tissues; both layers of the skin are burned and scarring always follows. These injuries are common in the naval service and are often of extreme gravity.

Considerable shock may accompany burns, the severity of the shock depending on the extent of the

body surface involved. Shock is evidenced by a cool moist skin, shallow respiration, and weak pulse.

Treatment.—Remove the clothing from the part with the utmost care to avoid breaking blisters. It may be necessary to cut the clothing away, and if the clothing sticks to the burned surface it should be soaked with oil or warm salt solution before removing it. Only one part should be dressed at a time. In first and second degree burns, cover the burned surface with cloths or pieces of lint soaked in a saturated solution of boric acid, baking soda, Epsom salts, or a 1 per cent solution of picric acid. If obtainable a dressing of boric-acid ointment, olive oil, fresh lard, or cream will also give relief. Carron oil, which is made by shaking equal parts of raw linseed oil and limewater together, is a simple and popular dressing for burns. Strong antiseptics and powders should be avoided.

Extinguishing burning clothing.—If your own clothing catches afire do not run, as this but fans the flames. Lie down on the deck, etc., and roll up tightly in a coat, blanket, or anything at hand that will smother the flames, leaving only the head out. If there is nothing at hand with which to wrap up, lie down and roll over slowly, beating out the fire with the hands at the same time.

If another person's clothing catches afire throw him to the ground and smother the fire with a coat, blanket, etc. In doing this, stand at the head and, holding down with one foot the blanket or whatever is used, throw it toward the feet of the person, thus sweeping the flames away from yourself and the face of the burning person. It is well to bear in mind that the air close to the deck is comparatively free from smoke. Hence, when unable to breathe, a rescuer should crawl along the floor with head low, dragging the person

rescued behind him. A wet handkerchief or cloth tied over the mouth and nostrils minimizes the danger of suffocation.

Burns by acids.—Flush the parts with water; then apply baking or washing soda and water, limewater, or soapsuds. This neutralizes any acid remaining and after this the burn may be treated as other burns. Burns from *carbolic acid* (phenol) should be washed with *alcohol*, if obtainable.

Burns by alkalis.—The parts should first be washed with water, then neutralized with diluted vinegar or lemon juice, and finally treated as for an ordinary burn.

Sunburn.—Sunburn should be treated in the same manner as other mild burns. Limewater, with the addition of two drops of liquid carbolic acid to the ounce, is a very soothing application.

Sunstroke or heat stroke.—This is a dangerous condition due to the sun's rays or to prolonged exposure to excessive heat. Usually, before the actual attack there is a feeling of oppression, headache, dizziness, and redness of eyeballs. If the symptoms are not checked the patient becomes unconscious, face flushed, pupils dilated, and the skin hot and dry, with engorged blood vessels. The pulse is rapid and the breathing labored. Spasms and often convulsions follow. If one feels the heat to be excessive and experiences the symptoms described above, a stroke may be avoided by stopping work, seeking a cool spot, bathing the face and head in cold water, and drinking a cup of hot water or tea to induce sweating.

Treatment.—Lowering the temperature is the primary object in these cases. Carry the person to a cool, airy, shaded spot and remove as much clothing as prac-

icable. Pour cold water or ice water over the head and body, or ice may be rubbed over the chest and placed in the armpits. If at hand, a cold bath should be given, and while in the bath rub to restore circulation. When consciousness returns the cold applications should be discontinued and cool drinks or hot tea may be given. Do not give stimulants. These cases are serious in character and should be treated promptly and actively. If there is no ice at hand, cool water and fanning must be employed.

Heat exhaustion.—This is a condition of great depression of the system due to exposure to excessive heat. It often begins with dizziness, nausea, and vomiting. The skin is cool and moist, the pulse feeble and fluttering, perhaps imperceptible, and the patient greatly depressed, though he may not be unconscious.

Treatment.—Carry to a cool place and loosen clothing. Give stimulants such as hot coffee, tea, or soup, or aromatic spirits of ammonia. Do not use cold sponging or bathing.

EFFECTS OF COLD

Frostbite.—This is due to the local effect of cold on the exposed parts of the body. Usually the toes, fingers, ears, or nose are involved. The affected part has been extremely cold, then it becomes insensitive and has a white or grayish color.

Treatment.—The object in treating frostbite is to restore slowly and gradually the circulation of the blood and warmth in the part affected. If the case is mild and some reaction from the extreme cold has begun, rub the part lightly and apply cloths wrung out in cool or tepid water. If the part is still dead and cold, combine the rubbing with the use of wet snow or ice water and as circulation begins to return use water

not so cold. The rubbing must not be too energetic, as any roughness or bruising will increase the damage. Also do not use heat at first, as the danger of sudden thawing is gangrene or death of the part. Hence while the person should not go into a warm room or near a fire, he should go or be removed to a sheltered place until circulation is restored. After the circulation is well established, then warm water may be used for bathing the affected part.

Freezing.—This condition of the body is produced by long exposure to extreme cold. The effect of the cold is increased by overexertion, hunger, insufficient clothing, and alcoholic liquors. The body and limbs first feel numb and heavy, and then become stiff, followed by drowsiness and an irresistible desire to sleep. The depression of vitality is so great that the appearance is frequently that of a dead man.

Treatment.—The object is to restore warmth to the body gradually. Carry the person into a cold room or a sheltered place; rub his limbs toward the body briskly with rough cloths wet in cold water. When stiffness is removed, artificial respiration should be performed if necessary. Gradually increase the temperature of the room and of the cloths used. As soon as he can swallow give stimulants in small quantities such as hot tea, coffee, or soup, or aromatic spirits of ammonia. A frozen person must not be taken into a warm room at once because sudden restoration of circulation frequently causes violent congestions and often sudden death through the formation of clots in the blood vessels.

UNCONSCIOUSNESS, EPILEPTIC FITS, AND POISONING

Unconsciousness may result from a number of different conditions, and to properly treat it you should

first endeavor to determine the cause. The surroundings should be considered as well as the appearance and condition of the unconscious person.

The common causes of unconsciousness are: Bleeding, severe injuries, electric shock, gas poisoning, sunstroke or heat stroke, heat exhaustion, freezing, fainting, fits, apoplexy or brain injuries, and certain poisons.

Treatment.—Take immediate steps to remove the apparent cause of insensibility, viz, stop bleeding; remove from presence of the poisonous gas; carry to shady place in case of sunstroke; or act as may be otherwise indicated. In case the body of the unconscious person is in contact with a live wire, the first thing to be done is to set him free from the wire. Great caution should be exercised in doing this, as to touch him with the bare hands will give the rescuer the same shock. If possible, the current should be cut off immediately. If this can not be done, contact may be broken with a piece of dry wood or if two live wires are in contact with the person they may be short-circuited by dropping an iron bar or a metallic tool across them. The rescuer's hands should be protected with rubber gloves; if these can not be procured, first wrap a mackintosh coat, or a thick *dry*, woolen-cloth coat, or other *dry* articles of clothing, around the person, and then pull him away from the source of danger.

To treat unconsciousness, place the person on the back with the head lowered. Loosen clothing. Hold ammonia or aromatic ammonia on a cloth under the nose. Do not try to give anything by mouth to an unconscious person. Sprinkle face and chest with cold water and rub the limbs toward the body. Keep the crowd away so that the person can get plenty of fresh air. When able to swallow give stimulants, coffee, tea, soup, or aromatic ammonia. Use artificial respiration

if necessary. Proceed as directed in Resuscitation, on page 477.

Epileptic fits.—The person, usually a young adult falls with a cry, the face is livid and person foams at the mouth. The foam is often blood tinged as the tongue is usually bitten. There are usually convulsive movements, rolling the eyes, and throwing the arms and legs about.

Treatment.—Lay the person on his back and control movements which might cause injury. Place a folded towel or other convenient wedge between the teeth so that the tongue will not be bitten. The convulsion usually lasts only a few minutes and then the person falls into a deep sleep which should not be interrupted. In the unconscious stage evidence of an epileptic seizure may be detected by the disarranged clothing, foam at the mouth, or the bitten tongue.

Poisoning.—Certain circumstances indicate that a poison has been taken.

1. In a person who has been in good health, sudden and severe sickness after eating, drinking, or taking medicine.

2. Possibly the person affected may have been sick, despondent, or has talked of suicide.

3. The presence of bottles or glasses in which some of the poison remains.

4. Frequently the person who has taken poison becomes frightened and tells some one.

5. If a number of persons who have eaten the same food becomes seriously ill after a meal, it is almost certain that they are suffering from poison, or probably food infection, called "ptomaine poisoning."

6. In carbolic-acid poisoning there is a strong carbolic odor and the lips, tongue, and mouth, are burned white.

7. In morphine poisoning the pupils are pin point in size, breathing is full and slow, and the person is very drowsy and, later, sleeps so soundly that it is almost impossible to arouse him.

8. Alcoholic poisoning may be evidenced by a strong odor of alcohol, pupils dilated, face usually flushed. Eyeballs red but not insensitive to touch. If unconscious, the condition should be differentiated from apoplexy. An apoplectic may have been drinking and so have the odor of alcohol on his breath. His pupils are frequently unequal in size, and there is a paralysis usually on one side of the body which may be shown by raising an arm or a leg. If paralyzed it will drop and offer no resistance.

Treatment.—Cases of accidental or suicidal poisoning may often be saved if treated promptly. If the poisoning agent is not known, the safest procedure is to give at once by mouth large quantities of lukewarm water. Then a mild emetic should be administered. A tablespoonful of powdered mustard or two tablespoonfuls of common table salt in a glass of warm water are both excellent emetics and may be repeated once or twice. Soapsuds or dishwater may act as an emetic, and in urgent cases should be tried. After copious vomiting, soothing liquids should be given, such as oil, milk, beaten-up raw eggs, or flour and water, each in moderate quantities. Then strong coffee, tea, or aromatic spirits of ammonia should be administered, and the person should be kept warm with hot bottles. Rub the limbs toward the body to increase the circulation. Obtain the services of a doctor as soon as possible.

Acid poisoning.—In acid poisoning give alkalies, such as a tablespoonful of aromatic spirits of ammonia in

a glass of water, baking soda, whitewash, tooth paste or soap.

Alkali poisoning.—In alkali poisoning, vinegar can generally be obtained and is an excellent antidote. It should be given undiluted and freely—a half teacupful at a time. Lemon juice may also be used.

SPRAINS, DISLOCATIONS, AND FRACTURES

Sprains.—A sprain is the straining or tearing, by a sudden twist or wrench, of the ligaments and capsule which surround a joint. The twisting and stretching of the ligaments result in the rupture of blood vessels with the escape of blood and blood serum (the liquid part of the blood) both around and into the joint.

Signs.—Pain, heat, and swelling at the seat of the injury, followed by discoloration of the skin. The ankle, wrist, knee, and elbow are most commonly sprained.

Treatment.—Absolute rest of the part. Elevate it if possible and apply cold or heat. Cloths soaked in ice water are excellent and a pack of crushed ice is also good. Cloths soaked in hot water are very good and should be changed frequently so that the application may be kept hot. Hot or cold applications should be continued at intervals for 24 to 48 hours, after which a snug bandage should be applied. If necessary, a splint should be utilized to prevent the patient from using the joint. A sprained joint should be rested for a few days at least, often longer, depending on the joint involved and the severity of the injury.

Dislocations.—A dislocation is an injury to a joint, characterized by a displacement of the head of the bone (a slipping out of its socket).

Signs.—First there is deformity; the joint has an unusual appearance. This is best seen by comparing the injured side with the well side. There is limited movement, pain, some shock, and usually swelling.

Treatment.—Send for a doctor at once. The risk of doing injury by injudicious efforts to replace a dislocated bone is greater than that of delaying until the services of a medical officer can be obtained. Place the injured member in the position most comfortable for the person and cover the part with cold wet cloths while waiting for the doctor.

Special dislocations.—Dislocation of the lower jaw and of fingers may be treated by anyone who has only a slight knowledge of first aid.

A dislocated jaw, with the mouth very wide open in consequence, is most painful and uncomfortable. The person is unable to close the mouth. To reduce this dislocation, wrap both your thumbs with several layers of cloth so that they will not be bitten. Then place both thumbs in the person's mouth on the lower teeth, one on each side, while the fingers grasp the outside of the lower jaw. Pressure is then made downward and backward. As the jaw starts to slide into place, let the thumbs slip off the teeth to the inside of the cheeks. If this is not done they will be caught by the teeth as the jaw bone goes into place. After reduction, apply a jaw bandage.

Dislocation of the fingers.—These dislocations are easily reduced. Grasp the finger on the palm side and hold firmly while with the other hand pull the end of the finger straight out. The bone will ordinarily slip easily into place. No dressing is required.

A fracture is a broken bone.

Causes.—*Direct violence*, in which the bone is broken where struck. *Indirect violence*, in which the bone is

broken at some distance from the point which received the blow such as a broken collar bone following a fall upon the outstretched hand. *Muscular action*, breaking a bone by a sudden and violent muscular contraction, as in the case of the kneecap in jumping.

Signs of fracture.—These are pain, swelling, and deformity at the seat of injury. Unnatural mobility, loss of power, and usually shortening of the limb. “Crepitus,” which is a sensation of grating to be felt when the broken ends of the bones move against each other.

Varieties.—There are two general classes of fractures simple and compound.

(1) *Simple fractures* are those which are beneath the unbroken skin.

(2) *Compound fractures* are those in which an external wound, communicating with the break, exists.

Treatment.—In the immediate treatment the following points should be attended to: The prevention of further injury, and the preparation of the person for transport. To prevent further injury, attend to the person on the spot where the injury occurred, especially if the fracture happens to be in the lower extremity. Do not unnecessarily handle the limb until you have all splints and bandages ready. By rough handling a simple fracture may be converted into a compound or complicated one, especially where the bones are immediately under the skin, such as the collar bone and the shin bone.

Without removing the clothes, unless the fracture is compound or there is hemorrhage, bring the bones into their relative positions as follows: First, lift the limb by grasping it gently but firmly above and below the seat of fracture, then make gentle extension in the

normal line of the bone; this should cause little or no pain. Fix the limb in this position by means of splints and bandages.

Splints.—Splints are more or less rigid supports used to immobilize joints and fractured bones. Many articles in daily use, and others that can be found in the field, can be used to keep the injured parts in place. For instance, broom handles, newspapers, wine-bottle covers, stockings filled with straw or sand, pieces of wood, and laths can be employed. In the field we may make use of the branches of trees, pieces of bark, shrubs, rifles, and bayonets. The opposite leg can be used for



FIG. 99.—Splint improvised from sticks with blanket material for padding

a splint for the injured one (fig. 100), and in the case of the upper extremity it can be splinted against the chest by snugly binding it there with bandages.

Improvised splints.—These splints should always be constructed out of material which is sufficiently stiff to keep the parts in position; they should be made long enough to extend some distance beyond the point of fracture and beyond the joint above it, if possible. They should be as wide as the limb to which they are to be applied. Before applying splints, pad them well on the side next to the limb (unless the clothing is allowed to remain on) with some soft material, such

as towels, cotton, wool, oakum, straw, flannel, folded triangular bandages, etc., and make the padding extend well over on each side of the splint. (Fig. 99.)

To apply splints.—Two persons are required. One makes traction, and gently lifts the injured part while pulling steadily in the line of the injured bone. This can sometimes be done with one hand. In that case the other hand should be put under the seat of fracture to support it. The second person applies the splints, one on each side of the limb, and fixes them in position by tying about them above and below the line of fracture with triangular bandages folded narrow, or straps,



FIG. 100.—Opposite leg used as splint for injured one

belts, suspenders, tapes, or rubber plaster. All knots should be tied over the outer splint and not over the bone. The general rule that injured parts should be elevated holds good in the case of fractures. The splints should not be applied so tightly as to impede the circulation. If splinted limbs are allowed to hang down, swelling follows, and the circulation may be dangerously cut off.

The immediate treatment of a compound fracture.—Expose the wound, check the hemorrhage, and apply the first-aid dressing. Then apply splints. The principal danger in these cases is wound poisoning. The

commonest source of poisonous bacteria or germs is the skin of the fingers or the skin about the wound. Do not touch the wound with unclean fingers unless necessary to stop bleeding to save life.

Transportation.—As a rule, persons with broken bones should not be removed until the bones have been splinted. Faintness is apt to come on after a fracture, but usually persons suffering from fractures of the upper extremity can walk with assistance. Those suffering with fracture of the lower extremity should be carried on a stretcher.

The injured person's care of himself.—Should the patient believe he has sustained a fracture, he should lie down carefully and should try to place the broken bone in its proper position, which will be found to be the most comfortable one. Under no circumstances should he attempt to walk if a lower extremity has been injured, as in this way a simple fracture might be made compound, or the bone ends might be made to tear into a larger blood vessel. -

SPECIAL FRACTURES

Fracture of the skull.—These injuries are very serious and should be treated by a medical officer as early as possible. Wound poisoning should be prevented by applying a dressing.

Fracture of the jaw.—Tie a triangular bandage or handkerchief under the chin and over the top of the head.

Fracture of the ribs.—Pass a wide band of rubber plaster or several narrow bands two-thirds around the chest while the arms are held over the head and the chest is emptied of air, or snugly apply wide bandages.

Fracture of the collar bone.—Rest the arm on the injured side in a sling, and secure this arm to the chest by pinning the sleeve to the jumper or by passing a bandage over and around the chest. (Fig. 101.)

Fractures of the arm and forearm.—The proper method of dressing a fracture of the forearm is shown in Figure 102. The part should be carried in a wide sling.



FIG. 101.—First-aid treatment for fracture of collar bone

This figure shows also the proper method of dressing a broken upper arm. It will be noticed that the sling does not support the elbow.

Fracture of the leg.—An ordinary pillow tied about a broken leg makes an excellent splint.

Fracture of the thigh.—(1) A broken thigh is the most difficult bone in the body to splint properly. The splint on the outside should extend from the armpit beyond the sole of the foot and that on the inside from the crotch to the sole of the foot.

(2) In the field a rifle may be used instead of the long outside splint. The butt is placed in the armpit, the trigger guard to the front. It should be secured at the points shown in Figure 105. The feet should be tied together, also the legs below the knee. This prevents the foot on the injured side from turning out.

WOUNDS IN GENERAL

A wound is any injury in which the skin is pierced or broken. The skin ordinarily acts as a protective

covering for the body and prevents the entrance of pus germs, but a break in the skin may allow germs to enter the system which can cause inflammation, formation of pus (matter), or blood poisoning. These germs can only be seen with a powerful microscope, but we know that they are found practically everywhere; on



FIG. 102.—Dressing for fracture of forearm



FIG. 103. — Dressing and sling for fracture of arm

the surface of our body (especially on the hands, and on anything which may cause a wound. Consequently in any wound, except those made by a surgeon, whose training has made it possible for him to prevent infection, there are a certain number of germs introduced. Many of them are washed out by the bleeding which

occurs, and the tissues of the body generally destroy the remaining ones. We find such wounds heal rapidly with very little, if any, pus formation. In wounds made with sharp instruments there are fewer germs introduced than in those made by blunt instruments. There is also less damage to the tissues and the uninjured cells of the body are better able to destroy germs than the bruised tissues which result from wounding with blunt instruments.

Treatment.—It is always best to have a doctor see the wound, if he is available. Turn back or cut away



FIG. 104.—Pillow splint for fracture of leg.
Note method of placing wounded man in

clothing from the wound. All clothing may be a source of infection. If there is severe bleeding, check it before applying the first-aid dressing.

Minor wounds or wounds resulting from crushing injuries may be treated as follows:

1. Do not touch the wound with the hands or allow the person to do so.
2. Swab the wound freely with iodine or turpentine, using a small brush or a piece of cotton on a stick.
3. Apply first-aid dressing over the wound.

4. If there is much delay before reaching a doctor the parts around the injury may be carefully cleansed, provided the first-aid dressing over the wound is in no wise disturbed.

When confronted with major wounds, the following instructions should be followed: (1) Do not touch the wound with the hands or allow the person to do so. (2) Do not wash it, as water contains germs and may infect the wound. (3) Do not use antiseptics such as



FIG. 105.—Rifle used as splint for fracture of thigh

bichloride of mercury and carbolic acid, for if used too strong the cells of the tissues may be destroyed and their assistance is lost in fighting the infection. (4) The best way to prevent infection is to cover the wound with a sterile dressing, such as is contained in a first-aid packet. This should be bound on at once and will help to check slight bleeding.

It is better to leave the wound exposed to the air than to apply a dressing which is not sterile, as a wound is not apt to become infected from air.

5. Iodine solutions are very valuable in the treatment of wounds, as they will kill many of the germs. Paint

the wound *freely* with a small brush or a piece of cotton on a stick.

6. Do not use iodine near the eyes.

7. For directions in use of first-aid packet, see "The application of first-aid dressings."



HEMORRHAGE OR BLEEDING

Bleeding from an ordinary wound is usually stopped by exposure to the air or by the pressure of a wound dressing. In more severe cases some other method must be used, and quickly. Knowledge of methods of stopping hemorrhage may be the means of saving life. There may be no visible bleeding from internal hemorrhage.

Excessive loss of blood may cause faintness, cold skin, pallor of face, dilated pupils, feeble and breathing irregular, often sighing, a weak pulse, and eventually loss of consciousness.

Bleeding from *arteries* is most serious and is recognized by bright red blood, expelled in spurts. The blood may be lost very rapidly.

Bleeding from *veins* is characterized by a steady flow of dark blood, and is only dangerous when from very large veins.

Bleeding from capillaries, which are the smallest blood vessels, is usually oozing blood.

Treatment.—(a) Check the hemorrhage.

(b) Place the person on back with the head low so that the brain will get as much blood as possible.

(c) Prevent any violent movements which might increase the bleeding. When the bleeding has ceased, the injured person should be kept quiet, for any movement may dislodge the clot and start the hemorrhage again.

(d) Give plenty of fresh air.

(e) Keep patient warm by whatever means possible and surround with hot-water bottles if obtainable.

(f) Stimulants should be used with care as they increase the force of the heart and promote bleeding.

(g) If a patient is in collapse, forcing the blood from the extremities to the heart by bandaging from the fingers to the armpits and from the toes to the body may save life.

To check bleeding from arteries.—Some knowledge of the general course of the main arteries is necessary. This may be obtained from a study of Figure 106. Also feel for the pulsation of these arteries in your own body to become familiar with their location, and the amount of pressure necessary to arrest the flow of blood.

Press the fingers or the thumb on the artery between the bleeding point and the heart. Finger pressure is tiring and can not be kept up very long (usually not longer than 15 minutes), so other methods must be used to control the hemorrhage until clotting has taken place and the bleeding permanently stopped.

1. Bleeding from any part of the scalp may be stopped by a tight bandage encircling the head, across the forehead, above the ears.

2. All other arterial bleeding from the *head and the upper part of the neck* should be checked by pressure on the carotid artery which supplies that region. Press backward deeply into the neck with the thumb or fingers to the inner side of the plainly seen muscle which extends from the upper part of the breast bone to behind the ear. (Fig. 107.)

3. Wounds of the *great vessels of the neck* are so extremely dangerous that direct pressure on the bleeding point should be made at once.

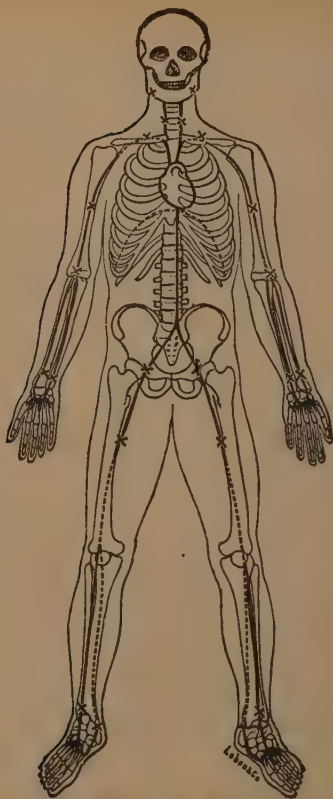


FIG. 106.—Skeleton with black and dotted lines showing the course of the arteries and x indicating the pressure points. (Mason.)

4. Bleeding about the shoulder may be checked by compressing the subclavian artery behind the middle portion of the collar bone. (Fig. 108.)

5. Compression of the brachial artery will control bleeding from any part of the arm or hand. This artery may be compressed by pressure outward against the bone at the inner border of the biceps. (Fig. 109.)

6. In bleeding from the lower extremity, pressure on the femoral artery will control it. This pressure



FIG. 107. — Pressure on carotid artery to control bleeding from the head and upper part of neck



FIG. 108. — Pressure on subclavian artery behind collar bone to control bleeding about shoulder.

should be made at the middle of the groin, four fingers' breadth below the fold. (Fig. 110.)

7. Bleeding from the leg may be controlled by placing a pad behind the knee and bending the knee sharply on the pad. Apply a bandage to keep the leg against the thigh. This method may be used at the elbow.

A tourniquet is an appliance used to constrict the arm or the thigh, and by so doing control hemorrhage.

There are many forms of tourniquets, most of them having a pad to press on the artery and a strap to



FIG. 109.—Pressure on brachial artery to control bleeding in arm and hand.



FIG. 110.—Pressure on femoral artery to control bleeding in lower extremity.

apply pressure. One may be improvised with a smooth stone wrapped in some material to make it softer, and a handkerchief or other similar articles. (Fig. 111.)

The Navy tourniquet is an elastic rubber tube. This should be bound tightly around the limb and its ends secured by tying. The tourniquet is very useful, but may be very dangerous. It should not remain on longer than one hour without loosening, as there is danger that the lack of blood supply will cause death of the part. If the bleeding starts again then pressure must be applied as before. If pressure is made

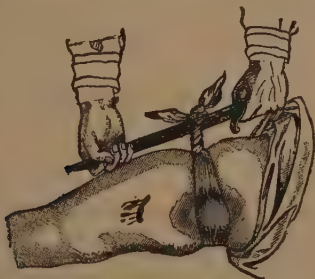


FIG. 111.—Spanish windlass

in the wound itself place a first-aid pad or a clean piece of cloth over the wound and make pressure through this. Only if absolutely necessary should a finger come in direct contact with a wound.

Elevation of the part aids in controlling hemorrhage.

THE APPLICATION OF FIRST-AID DRESSINGS

The first-aid packet contains two compresses made of folds of gauze bandage and two safety pins. The dressings are wrapped in wax paper inside a water-

proof metal case. The two compresses are for the two wounds, that of entrance and that of exit of bullet. Gauze tails hold the compresses in place, and may be secured with the safety pins.

Skill in the application of these dressings can be acquired by frequent drills.

Large dressings are furnished for use on shell wounds. They are backed by muslin and have four tails for securing around the body. The muslin goes outside and the gauze next to the wound. Open the package and apply without touching the gauze with your fingers.

The immediate treatment of gunshot wounds differ in some particulars from the treatment of wounds in general.

(1) Under no circumstances attempt to disinfect or wash the wound.

(2) The wound is not to be touched with the fingers. Avoid handling that part of the dressing which will come in contact with the wound. The danger of infection from fingers is very great, and may lead to more serious results than the bullet itself.

(3) Care must be taken that the compresses do not slip off the wound.

(4) In dressing wounds of the scalp, part the hair or cut away some of it before the compress is applied.

(5) If necessary, the clothing should be slit up with a knife.

(6) The majority of wounds heal under a single dressing.

(7) Under no circumstances should dried blood crusts and scabs be disturbed.

The wounded person's care of himself.—Apply the first-aid dressing and compress the bleeding vessel in

the wound through this dressing. Elevate the part, loosen constrictions, and apply a "Spanish windlass." Lie down and remain quiet. If the bleeding is profuse, press the great vessel supplying the part against the bone and apply a "Spanish windlass" made with a neckerchief or a triangular bandage and tightened with a stick or bayonet.

After the checking of dangerous hemorrhage, the prevention of germ poisoning is of the greatest importance. Carefully get out the first-aid packet, seeing that none of its contents is dropped on the ground and that the fingers do not touch the parts of the compress likely to lie in contact with the wound. Do not disturb crusted blood on the dressing near the wounds. If the wound is out of reach and can not be dressed at once, it should be left exposed to the air until assistance comes. If there is little pain, no throbbing, and no fever, be contented, for the wound is doing well and will probably heal under a single dressing.

Gas casualties.—The first-aid treatment of these cases depends upon the type of gas encountered. The gas officer will furnish this information after a gas attack. Remove patients from gas area as soon as possible. Keep masks in position until out of gas zone.

Tear gases.—To relieve irritation resulting from tear gases, wash out the eyes with boric-acid solution or weak baking-soda solution or limewater. **Do not bandage the eyes.**

Lung irritants.—First-aid treatment for gases of this type consists of loosening the clothing and making the patient lie down and remain quiet. If moved, they should be considered stretcher cases and must not be allowed to exert themselves.

Vesicants (blistering gases).—All men who have been exposed should be given a complete bath and a change of clothing as soon as conditions permit. Wash out the eyes with boric-acid solution and apply weak sodium-bicarbonate solution (baking soda) to affected parts. Rest and body warmth should be maintained.

METHODS OF CARRYING THE WOUNDED WITH ONE, TWO, OR THREE BEARERS; THE USE OF REGULAR AND IMPROVISED STRETCHERS

The preparation of the wounded for transportation.—The first-aid dressings should be applied and broken bones should be made immovable by means of splints. The following discussion will cover and illustrate the methods of carrying the wounded with 1, 2, and 3 bearers and the proper use of regular and improvised stretchers:

Where men are injured aboard ship, it may be necessary for the man nearest to him to render him first aid. At general quarters Hospital Corps men are located at stations over the ship so as to be in position to take care of injured men as promptly as practicable. In taking care of injured men in engagements in which the Navy takes part through landing forces, etc., it may frequently happen that only one man is available to aid the injured man. The first consideration is to render whatever first aid may be possible under the circumstances. It may be, however, that the injured man is in so exposed a place that it is highly important to get him to some sort of shelter.

WHERE ONLY ONE MAN IS AVAILABLE TO CARRY THE INJURED

In a situation where only one man is available to carry the injured man to shelter or to an emergency

dressing station the best method of carrying the injured man will depend upon the nature and seriousness of his injury, the nature of the field or place, the battle situation, etc. Because of these factors, the particular method of carrying the man must be left to the best judgment of the man who is to carry him.

1. **In arms carry.**—If the general situation permits your carrying the injured man in your arms, the accepted method is as follows: Turn the injured man over on his face, step astride his body, facing toward his head. With your hands under his armpits, lift him to his knees; then clasp your hands under his stomach (abdomen) and lift him to his feet. With your left hand clasp the injured man's left wrist and draw his left arm around your neck, holding it against your left chest, with the injured man's left side resting against your body, supporting him with your right arm around his waist. This completes the first step. (See illustration, fig. 112, for a picture of this first step.)

From this position, with your right arm around the injured man's back, pass your left arm under his thighs, and lift him into position, carrying him well up. (See illustration, fig. 113, for completion of the second and final step.)

2. **Across-back carry.**—A second method of transporting an injured man is that of across-back carry. The method of getting the injured man upon your back in the proper manner is as follows: Lift the wounded man erect, or as nearly so as practicable, as in "In arms carry." Seize his right wrist with your left hand and draw his right arm over your head and down upon your left shoulder, leaving your right hand free. (See illustration, fig. 114, for completion of the first step.)



FIG. 112



FIG. 113



FIG. 114

Then shift yourself in front of the man, stoop, sustaining part of his weight upon your shoulders and back, thrust your right hand and arm between his legs, clasping his right thigh with your right arm. Shift his left wrist to your right hand. Now grasp his left hand with your left hand. (See illustration, fig. 115, for completion of the second step.)

As you stand up, steady his left hand against your side. (See illustrations, fig. 116, for final step.)

3. Modified across-back carry.—Immediately following are given directions for getting a man into the proper position for carrying from either his right or left side. The description reads from point of view of the bearer who has taken position on the man's left side. The right-side positions are indicated in parentheses.

Lay the injured man out upon his back. Kneel at his left (right) side and flex (bend) his left (right) leg at a right angle to his body and under his right (left) leg. (See illustration, fig. 117, for first step.)

Place your right arm under his right (left) leg, behind the knee. (See illustration, fig. 118, showing second step.)

With your left (right) hand grasp the right (left) wrist of the man and draw his right (left) arm over your head, placing your head and neck snugly under his right (left) armpit. Shift the man's right (left) wrist to your right (left) hand, grasping his right (left) wrist firmly with your right (left) hand; next place your own left (right) hand, palm down, on the right (left) foot of the man. (See illustration, fig. 119, for third step.) Then partly rise and at the same time exert pressure on the man's right (left) foot for leg, holding the foot against the ground. (See illustra-



FIG. 115



FIG. 116



Fig. 117



FIG. 118



FIG. 119

tions, figs. 120 and 121, for fourth step.) As soon as you have gained your balance, assume an erect position and grasp the man's free hand with your own, bringing it to your side. (See illustrations, figs. 122 and 123, for final step.)

4. Another modification of the across-back carry.—It may happen that on account of the stature or weight of the man to be carried the bearer will find it impossible to get him upon the back in the way indicated above, or the condition of the man may preclude getting him upon your back in the manner previously described. In such a case the method described below may prove a better way of getting the man in position to carry him.

Place the man to be carried on the ground upon his back. Lie down beside him on your back at his left (right) side, with your hips about even with his shoulders, your head toward the injured man's feet, overlying about one-fourth of the man's trunk (body). Then reach across his abdomen, grasp his right (left) arm above the elbow from its under (posterior) side with your own right (left) hand, and with your left (right) grasp the man's right (left) arm below the elbow from the front side. (See illustration, fig. 124, for first step.) Then turn over away from the man, pulling him with you by his right (left) arm. At the completion of this movement the man should be lying upon his chest on your back at a right angle, with his arm over your left (right) shoulder. (See illustration, fig. 125, for second step.)

Holding the man's arm, move slightly toward his pelvis (hips) with your right (left) hip and shoulder. Place your right (left) arm between the man's legs. Draw his right (left) leg to you. Place his right



FIG. 120



FIG. 121



FIG. 122

(left) wrist in your right (left) hand. (See illustration, fig. 126, for third step.)

Rise to an erect position by helping yourself with your left (right) hand on the ground, and obtaining a



FIG. 123

purchase on the ground with your right (left) foot. It is believed that this method has certain advantages in getting badly injured or unconscious men upon one's



FIG. 124

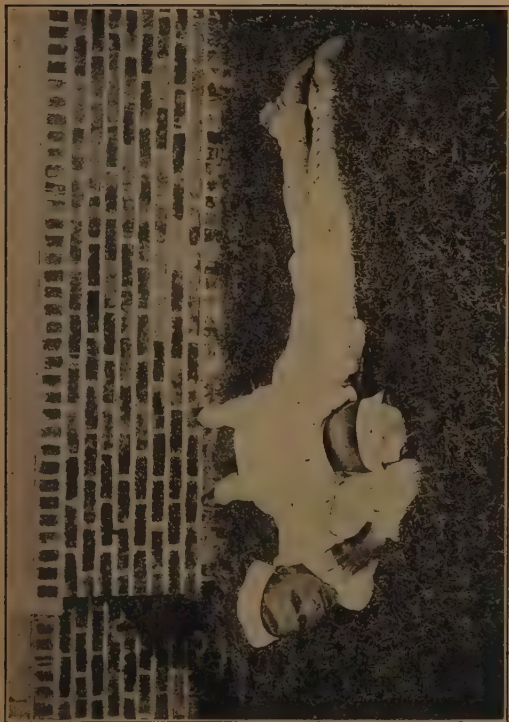


FIG. 125



FIG. 126

back. (See illustration, fig. 127, for the fourth and final step.)

5. **Tied hands crawl or carry.**—The condition of the field or battle situation may render it impossible to attempt to take a man to the rear or to a dressing station by any of the previously mentioned methods. But it may be possible to take a man to shelter or to the rear, crawling along with him secured over your back, and in this way partly avoid open view, machine-gun fire, snipers, etc. In such a situation the following method, known as the tied-hands crawl or carry, may prove valuable.

Lay the man to be carried on his back and place yourself upon your back by his side, your head in the same direction as his and overlying about one-quarter of his body. Grasp his right (left) arm above the elbow from its lower (posterior) side with your right (left) hand. With your left (right) hand grasp his same arm below the elbow, from the top (anterior) side. (See illustration, fig. 128, for first step.) Then, keeping the right (left) side of your body slightly upon the man's body and entwining your limbs (legs) around his own, roll over onto your chest (stomach), pulling the man with you. The man is now lying face down on your back, with one arm over your shoulder. (See illustration, fig. 129, for second step.) Next, grasp his free arm and draw it to you. Place your own arm on top, so that the man's arm is under your left (right) armpit. Secure both wrists of the man with any available material (neckerchief, handkerchief, etc.). You may then crawl with the man in this position, or, when necessary, rise erect and climb ladders, or reach behind and carry the man (pack on back) by seizing each leg and bending it at the hip. This method may be varied by tying the



FIG. 127



FIG. 128



Fig. 129

man's wrists together first and then lying down on top of him and inserting your head and shoulders through the loop formed by the man's tied wrists. (See illustration, fig. 130, for final step.)

WHERE TWO MEN ARE AVAILABLE TO CARRY THE INJURED

1. "Chair" or four-handed carry.—In this method of carry each bearer grasps his own left wrist in his right hand and the other bearer's right wrist in his left hand, with the backs of the hands uppermost. The bearers then stoop and place the improvised chair under the sitting man, who steadies himself by placing his arms about their necks. (For illustration see fig. 131 for this carry.)

2. By the extremities.—One man takes position at the injured man's head and the other man takes position between the injured man's legs, both facing toward the wounded man's feet. The man standing at the head of the injured man, clasping him from behind around the body under the arms raises him to a sitting position. At the same time the man standing between the man's legs passes his hands from the outside under the flexed knees. At the word, both rise together.

This method requires no effort on the part of the injured man, but is not a good carry in cases of severe injury to the extremities (legs, arms, etc.). (See illustration, fig. 132, for this carry.)

Where three men are available, the carry as indicated in figure 133 is possible.

Every man should practice the one-man-carry methods for transporting injured men until he is able to use any of them readily, for the good and sufficient reason



FIG. 130

that such knowledge may be the means of his saving the life of a shipmate instead of leaving him helpless upon the field.



FIG. 131

THE USE OF REGULAR AND IMPROVISED STRETCHERS

General directions for handling a stretcher.—(1) The method of placing a wounded man on a stretcher is



FIG. 132

shown in Figure 134. The position of a patient on a stretcher depends upon the character of the injury.



FIG. 133

An overcoat, blanket, knapsack, or other suitable articles may be used as a pillow. If the patient is faint, the head should be kept low. Difficulty in breathing due

to wounds of the chest is sometimes relieved by judicious elevation of the shoulders. In wounds of the abdomen the best position is on the injured side, or on the back if the front of the abdomen is injured, the legs being drawn up and supported in this position.

(2) In injuries of the upper extremity the best position is on the back with the arms across the body or



FIG. 134

suitably placed by its side. In injuries of the lower extremity the patient should be on his back, or inclining toward the wounded side. Patients should be handled deliberately and as gently as possible, having special care not to jar the injured part. Bearers should not keep step. The handles of the stretcher should be carried at arms length. Bearers should keep the stretcher level, notwithstanding any unevenness of the

ground. As a rule, the patient should be carried on a stretcher feet foremost, but in going up a hill his head should be in front. In case of fracture of the lower extremities, he should be carried up a hill feet foremost and downhill head foremost, to prevent the weight of the body from pressing down on the injured part.

Improvised stretcher.—(1) An improvised stretcher should always be tested before placing a patient on it.

(2) Among the articles that may be employed as stretchers are boards, window shutters, doors, bed frames, mattresses, benches, tables, chairs, blankets, rugs, hammocks, etc.

(3) Rifles or poles may be passed through openings made in the bottom of sacks or coats, or trousers may be used. The rifles or poles can be prevented from spreading too far apart by a turn of rope or telegraph wire.

The rifle stretcher.—Spread a blanket on the ground and lay two rifles (magazines empty) across the middle of it parallel to each other and 20 inches apart, both muzzles pointing in the same direction, trigger guards outward. Turn a fold of the blanket 6 inches wide over the end of the butt, fold the right side of the blanket over the rifle on the opposite side, then, similarly, fold the left side. These folds of blankets form the body of the stretcher, the butts forming the head.

The pole and blanket stretcher.—Place two poles longitudinally along the edge of the blanket and roll the sides of the blanket snugly over the poles until they are 20 inches apart. The blankets can then be tied to the poles, and sticks of wood can be placed between the poles at each end to act as spreaders.

The pole and rope stretcher.—Place two poles 20 inches apart and securely lace back and forth a suitable piece of rope; this rope forms the body of the stretcher.

TYPHOID PROPHYLAXIS

Typhoid prophylaxis is given all hands in the Navy every four years until the age of 45 years. It consists of three injections in the arm, usually about 10 days apart. This prophylaxis treatment has practically wiped out all typhoid fever in the Navy. This disease used to be the most frequent and most deadly disease the Navy had to contend with. Large numbers of men used to die of this every year. Since this prophylaxis treatment has been made compulsory there have been but few cases of typhoid developed in the Navy, and most of these were of a very minor nature.

NOTE.—The resuscitation of the apparently drowned will be found on pages 477-481.

CHAPTER 29

SUBJECT L.—PAINTING AND THE PREPARATION OF SURFACES THEREFOR

[From Sailor's Manual of Paints and Painting, 1923]

PAINTS IN GENERAL

Objects of painting.—Paints and varnishes are used to preserve and ornament surfaces. The protection of metal surfaces is the chief object of much of the painting done on warships. How important this protection is, may be seen on the rusted scaling sides and fixtures of any ship on which the painting has been neglected or poorly done, even for a short time.

Keeping a warship in first-class condition means a constant battle against rust, and the only effective protection against rust is good paint properly applied to metal surfaces that have been carefully prepared for painting. Often in scrapping naval ships that have seen many years of service in all parts of the world, the surfaces of plates and fittings have been found to be in almost perfect condition. This shows how effectively steel and iron can be protected when the right kind of painting is done.

Composition of paints.—A paint consists principally of two elements called the *pigment* and the *vehicle*.

The pigment is the body of opaque coloring matter used to cover and protect a painted surface and consists of very fine, solid particles of matter that can not

be dissolved by water. Various mineral substances are used for this purpose. A good pigment must hold its color, must adhere closely to a surface and form a permanent protective covering for the material beneath it.

The vehicle is the liquid portion of the paint. When the paint dries, the vehicle evaporates and leaves the coloring matter deposited on the surface. Linseed oil is largely used as the principal part of the vehicle in paints, because it dries readily and is converted into a transparent, resinlike mass which holds the pigment effectively to a surface. Cottonseed oil, China-wood oil, and other less expensive oils are sometimes used instead of linseed oil.

In addition to the oil used as the principal part of the vehicle, other substances are added to paints, such as *solvents*, to make the paint more liquid, and *driers*, to hasten the hardening of the paint.

PREPARATION OF SURFACES TO BE PAINTED

Next in importance to a properly compounded, well-mixed paint is the careful cleaning of the surface. The old Biblical adage, "A house founded on the sand will fall," holds true in paintwork. The most expensive paint will be of little value as a protective or decorative coating if it is applied on an insecure foundation. The paint secures its hold on the surface by the penetration of part of the vehicles in the pores of the surface. If loose old paint, rust, dirt, dust, moisture, or grease exist on the surface, it will prevent the new paint from entering the surface pores.

It should be borne in mind, therefore, that the first essential to good paintwork is the proper preparation of the surface. Any infraction of this rule on the part

of a painter will surely result in loss of his labor and his employer's material.

When painting ironwork, it is very important to remove all scale, grease, rust, and moisture. Rust has the property of spreading and extending from a center if there is the slightest chance to do so. Hence a small spot of rust on the metal may spread *under the surface of the paint* until in time the paint will flake off. For this reason it is very essential that all traces of rust shall be removed. Deep-seated rust spots may be removed by applying heat from a painter's torch. The heat converts the rust into another form, which is harmless and can be easily dusted off.

APPLICATION OF PAINT

As all painting on board ship is done by brush, only this method of application will be considered. The following advice will be of value if properly followed:

First.—Hold the brush by the handle and not by the stock. If the brush is held by the stock the hands become covered with paint, which may cause blood poisoning, especially if small cuts are exposed and lead paints are used.

Second.—Hold the brush at right angles to the surface, with the ends of the brush alone touching, and lift it clear of the surface when starting the return stroke. If the brush is held obliquely to the surface and not lifted, the painted surface will be uneven, showing laps and spots and a generally dauby appearance.

Third.—Do not completely fill the brush with paint. Dip only the ends of the brush into the paint. Do not charge the brush with paint unless the preceding charge has become sufficiently exhausted.

Fourth.—Apply the paint with long strokes parallel to the grain of the wood. When painting along smooth surfaces draw the brush along the whole surface if convenient, so that there will be fewer breaks in the lines.

Fifth.—Cross the work by laying off the paint over a small section with parallel strokes and then crossing the first application with parallel strokes at right angles to the first ones. A medium pressure should be applied during the crossing and a light pressure during a final laying off. All final laying off should be in the length direction of the work.

Sixth.—When painting overhead surfaces, the ceiling panels should, as far as possible, be laid off fore and aft, and the beams athwartship. Where panels contain a great many pipes running parallel with the beams it would be difficult to lay off the ceiling panel fore and aft. In such cases better results will be obtained by laying off parallel with the beams.

Seventh.—When painting vertical surfaces, bulkheads, etc., the work should be laid off vertically. In all cases each succeeding coat of paint should be laid off in the same direction.

Eighth.—Keep the paint in the pot well mixed while the work is proceeding.

Ninth.—Remember that paint applied in a too heavy coat will show brush marks and will give an uneven finish. Better results will be obtained by applying two coats of thin or medium body paint than one coat of heavy paint.

Tenth.—Do not apply a succeeding coat of paint before a previous coat is sufficiently dry. A paint dries because of its contact with the air, and the drying of the first coat will be retarded if the second coat is applied too soon.

CARE OF PAINT

After a container of paint has been opened and the paint partly used, it should be covered and kept as air-tight as possible to prevent a paint scum from forming on the surface. When scums or foreign substances become mixed in with the paint, it should, before being used, be strained through fine-gauge wire or cheese-cloth.

Do not expose shellac unnecessarily to the air, as the alcohol evaporates quickly from the shellac, thereby producing a thick, stringy mass.

Do not allow nails or other iron substances to fall into shellac, as iron will discolor the shellac sufficiently to render it useless. Shellac should not be applied on a damp day, as moisture has a tendency to turn it white. Always pour unused paint back into the stock container and wipe out the empty pot with a brush. This will prevent skin forming on the sides of the pot and will keep the pot in good condition for subsequent use.

BRUSHES AND HOW TO CARE FOR THEM

For general work on board ship the following brushes have been found to be most suitable:

Navy designation	Type of brush	Suitable for use on—
B-2	Flat paintbrush.....	Large surfaces.
C-1	Sash tool brush.....	Small surfaces.
D-1	Fitch brush.....	Do.
D-3	do.....	Very small surfaces.
E-2	Oval varnish brush.....	Rough work.
F-2	Flat varnish brush.....	Medium work.
W-3	Ox-hair varnish brush.....	High-grade work.
W-5	do.....	Do.
N-4	Camel's-hair lettering brush.....	Small surfaces.
N-8	do.....	Large work.
K-2	Painter's dusters.....	Cleaning work.

How to prevent bristles from falling out.—Steps should be taken to tighten the bristles of all brushes before they are put in use, since paint and varnish brushes which are in every way satisfactory at the time of inspection when delivered by contractors may when issued from store be defective in that they shed bristles to a very objectionable extent. This shedding of bristles has been ascertained to be due to the drying out of handles while in store. The bristles may be tightened by holding the brush in a vertical position with the bristles pointing up and wetting the end of the wooden handle inside the bristles with about a teaspoonful of water, then allowing about half an hour for the handle to swell, thus restoring the original pressure of handle and ferrule on the bristles; or it is still better to immerse the brush for 24 hours in water to top of ferrule.

How to properly clean a brush.—No matter how good a brush may be, it will be ruined very quickly if not properly treated when not in use. A paintbrush after use should be thoroughly cleaned out in turpentine, substitute, or soap and water. If left in water for any length of time the bristles are liable to twist and lose their elasticity. After cleaning, the brush should be kept in a trough containing a sufficient quantity of raw linseed oil to cover about one-half the bristles. Large brushes should have a small hole bored through the handle well up toward the stock. A wire can be inserted so that the brush can be suspended in the trough of oil. Brushes should never be stowed standing in buckets with the weight of the brush on the bristles. If large brushes are allowed to stand on the point they soon lose their shape and become useless.

(NOTE.—Should a paintbrush become quite hard with paint it should be soaked for 24 hours in raw linseed oil and then in hot turpentine. This treatment will generally loosen up the bristles.)

Varnish brushes should be suspended in the same kind of varnish with which they are used. If this method is not possible, boiled oil may be used instead. If a varnish brush has been thoroughly cleaned in turpentine, substitute, gasoline, or soap and hot water, it may be kept lying flat on its side in a suitable box.

Lettering brushes should be washed in turpentine, substitute, or gasoline until clean. If they are not to be used for some time they should be dipped in olive oil and smoothed from heel to point.

Shellac brushes should be kept in a small amount of mixed shellac or alcohol. Never put them in water. If the brush is not required for use in the near future, clean it in alcohol.

Binding of brushes.—To prevent the bristles in a round brush from spreading, it is good practice to bind the heel end of the bristles at the ferrule with cotton line. The effect of the serving or binding is to make the brush stiffer and to hold the bristles together. As the bristles become shorter, due to wear, the binding can be removed. Flat brushes need not be bound.

VARNISH

A paint is opaque and therefore completely covers the underlying material, while a varnish is transparent or translucent (partly transparent) and protects the surface without hiding it. Varnishes are usually made by melting resin or varnish resins in a pot, and then adding heated linseed oil or a mixture of linseed and China-wood oils. This mixture is thinned down with turpentine, mineral spirits, or with a mixture of the two. A good varnish depends upon the liquids used as solvents as well as upon the resin, for it is necessary to

use a solvent that will oxidize readily and bind the film of resin left on the varnished surface.

Application.—After the surface to be varnished has been thoroughly cleaned, filled, and rubbed off, the varnish is applied with a brush in the form of a uniform coat by crossing the work and allowing the varnish to flow in a smooth coating. It is essential that the surfaces be thoroughly cleaned from all dust particles, as these show plainly in the varnish.

Three days should be allowed to intervene between coats. Three coats should be applied on all new work.

For a dull finish, rub with pumice stone and water, then wash off and dry the surface with a damp chamois skin.

For a gloss finish, rub with pumice stone and crude oil, wipe and rub surface with rottenstone, then clean with crude oil (eight parts), mineral spirits (one part), finishing with cheesecloth or clean waste.

Do not apply the varnish too thick, as it will not dry underneath. The outer surface will dry first, forming a skin which will prevent the varnish underneath from drying by keeping it from coming in contact with the air.

BITUMINOUS COMPOSITIONS

Efficiency.—Experience extending over a number of years has indicated that the most efficient coating for metal work when applied on clean or new surfaces in double bottoms, inner bottoms, machinery spaces, fresh-water tanks, and similar spaces is a material usually made from coal tar, pitch, or asphalt.

Nature of material.—Bituminous composition is generally considered to consist of a bituminous solution which is applied cold as a priming coat, and a bituminous enamel which is applied hot over the solution.

The solution consists of bituminous material thinned with a suitable solvent to a brushing consistency. The enamel consists of bituminous material of relatively high melting point, with or without the addition of mineral matter.

NOTES ON THE USE OF BITUMINOUS COMPOSITIONS

(1) The solution will not adhere to a dirty surface, and as the solution forms a bond between the metal and the enamel it is essential that, prior to applying the solution, the metal surface be absolutely free from oil, grease, or rust. Many of the failures of bituminous compositions have been due to the applications of the material over dirty surfaces rather than to any inherent defect in the bituminous material itself.

(2) Care must be exercised in heating the enamel previous to application. As this material has a tendency to boil over, the pot must be only partly filled. The mineral matter tends to settle out from the hot enamel, and hence the material must be kept well stirred.

(3) The enamel should be applied to a uniform thickness of one-sixteenth to one-eighth inch. Care must be taken to see that the enamel completely covers the solution, as the solution itself affords but little protection. As the solution and enamel are both black, it may be difficult to see where the enamel has been applied, but with care and proper supervision this difficulty can be avoided.

BOTTOM PAINTS

Kinds used.—Although in the past a number of proprietary bottom paints were used, the only bottom

paints now used as standard are the anticorrosive and antifouling paints as manufactured at navy yards.

Object of anticorrosive bottom paint.—To prevent the destruction of the steel plating, an insulating coating is first applied to the steel vessel's bottom. This insulates the metals in the antifouling coating from the steel. This first coating is known as the anticorrosive coating because of the fact that it prevents the corrosion of the plating.

Object of antifouling bottom paint.—As is well known, the object of applying a bottom paint is to prevent the fouling of the ship's bottom. The ingredient used in antifouling paint to destroy marine growth is oxide of mercury. The antifouling paint should not come in contact with the steel plating of a ship's bottom, since it may cause pitting and consequent destruction of the steel.

Preparation of surface.—It has been stated in the preceding section on the preparation of surfaces to be painted that all surfaces must be carefully cleaned. This statement is particularly true in the case of ship-bottom paint because of the service conditions to which these paints are subjected. Oil and grease frequently found at the water line must be cleaned off with gasoline or some other solvent of grease.

Even though all loose paint has been scraped and chipped off, the anticorrosive paint will flake off almost as soon as it has been applied if the oil and grease have not been removed.

Application of anticorrosive paint.—Before applying any paint stir each drum until the paint has reached a uniform consistency. As the paint contains heavy pigments which settle rapidly, it must be frequently stirred during its application.

The anticorrosive paint dries very quickly because of the quick evaporating properties of its vehicle, and for this reason an operator must take care not to unconsciously keep painting over one spot and thereby build up a thick coating, with resultant waste of paint.

The paint should be applied with short, rapid strokes while the operator progresses steadily over the area to be painted.

Application of antifouling paint.—The antifouling paint can be applied almost immediately over the anticorrosive paint, two hours being generally considered a sufficient interval of time between the two coats. As in the case of the anticorrosive, the antifouling contains heavy metallic pigments. These impart to the paint its antifouling properties and must not be allowed to settle. Stir the paint frequently. Apply the antifouling paint only over the anticorrosive paint and not over bare metal, for if this is done pitting of the steel will surely follow.

A FEW DON'TS

(1) Don't use shellac as a protective paint on steel surfaces or where it comes in contact with water or damp conditions.

(2) Don't use shellac as an undercoating for outside varnish work.

(3) Don't do any puttying until the first or priming coat has been applied and is dry.

(4) Don't use boiled linseed oil for priming.

(5) Don't forget that no paint made will prove successful when applied over a wet or damp surface, whether such surface is wood, metal, plaster, or cement.

(6) Don't forget that painting or varnishing over a damp or "tacky" surface will cause blistering and "alligatoring" of paint and cracking of varnish.

(7) Don't forget that red lead is an excellent coating for tin, galvanized metal, steel, or iron.

(8) Don't apply varnish over a glossed surface. Haircloth or sandpaper will quickly remove the gloss and also improve the general appearance of subsequent coats.

(9) Don't attempt to produce a successful job of rubbing with water or oil and pumice stone or of polishing with rottenstone before the varnish is thoroughly dry.

(10) Don't forget that each coat of varnish must be thoroughly dry before applying another. If this fact is neglected cracking will surely result.

(11) Don't try to preserve steel surfaces unless examinations are frequent, surfaces are thoroughly cleaned, and repainting carefully done.

(12) Don't forget that the volatile thinners used in paint are inflammable. Keep all flames away from open containers of paint.

POISONOUS EFFECT PRODUCED BY PAINTS

A brief description of the poisonous effects of paint and of the means of preventing such effects is considered of importance in a manual of this character, because of the fact that some of the conditions under which poisoning can readily take place may be found on board ship.

Poisonous effects may be produced by either the vehicle or the pigment of the paint. The vehicles, which may consist of linseed oil, turpentine, mineral spirits (turpentine substitute), and possibly naphtha,

benzine, or benzol, are all, except linseed oil, volatile poisons. When used in the open they are not dangerous because of the dissipation of the vapors by air currents; when used in confined spaces, however, they are very dangerous and may cause disorders, as follows:

Turpentine.—Headache, dizziness, dry throat, frequent cough, indications of bronchitis, and irritation of the urinary system as shown by strangury and bloody urine. Turpentine is largely excreted by the kidneys, and there may be severe pains in the region of the kidneys; nervous effects are sometimes produced, such as excitement, staggering gait, convulsive movements, or even loss of consciousness. There may be inflammations of the skin of various kinds; a fatal case of poisoning from turpentine vapor is on record.

Mineral spirits.—Very little data are on hand indicating that the vapors given off by turpentine substitute are poisonous; in cases where it is claimed poisoning has resulted from the use of this material, the data furnished are insufficient to warrant the conclusion.

Benzine or naphtha.—The vapors effect the nervous system, cause a sense of pressure in the head, a singing or roaring sensation in the ears, a sense of confusion, dizziness, and a loss of muscular strength. The manifestations are staggering, clouding of the memory, even hallucinations of sight and hearing. Labored respiration, rapid pulse, collapse with complete unconsciousness, and, more rarely, convulsions may result. There may also be skin inflammations.

Benzol.—The symptoms of acute benzol poisoning are headache, dizziness, a flushed face followed by cyanosis (blue jaundice), nervous excitement, hallucinations, delirium, or coma. In chronic cases there are inflammation and ulceration of the gums and lips as in scurvy.

Navy paints.—It should be remembered in connection with the above that the Navy Department does not use benzol or benzine in its paints, and for this reason there should be little or no poisoning from the fumes given off by such paints.

PREVENTION OF POISONING BY VAPORS

The deleterious effects of these vapors are minimized by proper ventilation of confined spaces and by the proper use of gas masks.

DRY SANDPAPERING

Dry sandpapering of painted surfaces containing lead pigments is considered dangerous. It produces a fine powder of lead, which floats through the air. It may be inhaled, caught in the mouth and throat, mixed with saliva, and swallowed. It is estimated that less than a quarter of the dust taken into the human system reaches the lungs. Some lead poisoning is due to absorption of the fine dust through the pores of the skin.

Prevention: Use pumice stone and water or oil, or moisten the sandpaper with a cheap mineral oil which does not dry too slowly or too rapidly. The sandpaper will last as well with or without oil, and the effects upon the paint is negligible.

RUBBING OR CHIPPING OLD PAINT

In confined places a possible source of danger is flakes or chips of paint falling to the floor or drop cloth and becoming powdered from being stepped upon.

Prevention: Do not let the flakes or chips of paint collect; dampen the paint and install as thorough a system of ventilation as possible.

BURNING OF OIL PAINTS

This process is dangerous if the burnt-off part of the paint is allowed to remain on the floor and be powdered by being stepped upon. The flame of the torch should not be allowed to play long enough on the surface of the paint to produce a smoke. The heated oil fumes may cause headache. Fine particles of lead may be carried mechanically along with the flames and thus be inhaled.

DANGER FROM DUSTY CLOTHING, ETC.

The danger from dusty clothing or drop cloths is the same as that resulting from inhaling paint dust, as explained above.

Prevention: Clothing should so far as possible be kept in a clean place away from the dust-laden atmosphere.

DANGER FROM UNWASHED HANDS

Every painter runs the risk of carrying lead into his mouth if he handles his food, tobacco, etc., with unwashed hands. The risk is greater with greasy foods such as buttered bread and meat, as paint comes off easily on an oily surface.

Prevention: Personal cleanliness. Oil paints should be removed from the hands with warm water, soap, and brush, or with linseed oil, if necessary. Dry with clean towels. Painters should not use turpentine to clean paint off their hands. This will lead to what is known in the trade as "drop wrist." Do not eat in a paint-dust atmosphere.

HANDLING PUTTY

Before handling putty, the painter should coat his hands with soapsuds or raw linseed oil. This will pre-

vent the putty from sticking to his hands and will permit easy cleaning.

POISONING DUE TO PIGMENTS

The poisonous pigments are white lead (basic carbonate of lead), sublimed white lead (basic lead sulphate), and red lead. Of these three pigments the white and red lead are the most poisonous, the basic sulphate white lead being considerably less dangerous than either of the other two leads. The toxic effects of these pigments is known as lead poisoning.

CAUSE OF LEAD POISONING

Lead poisoning is not caused by the vapors given off by a freshly painted surface, but may result from the following:

1. Mixing dry lead with oil paint.
2. Dry sandpapering of lead-painted surfaces.
3. Rubbing or chipping off oil paint.
4. Burning off old paint.
5. Inhaling dust from dirty working clothes and from dirty drop cloths.
6. Inhaling fine particles of lead paint from a paint-spraying machine.
7. Carrying lead paint into the mouth from unwashed hands.

Mixing dry lead.—This source of poisoning is negligible, because white lead dry is very seldom handled by the painter, the paint being made up from white lead in oil. Red lead is now being furnished ready mixed from the dry pigment; the pigment should be handled very carefully so as not to inhale the dry powder or absorb it through the pores of the skin.

CHAPTER 30

SUBJECT M.—SWIMMING; LIFE-SAVING; RESUSCITATION; LIFE BUOYS

Swimming is discussed in detail in Part I, chapter, 15, page 177.

SECTION 1. LIFE-SAVING METHODS

[Illustrations and portions of text by courtesy of the American Red Cross]

Persons in distress in the water should try to throw themselves on their back in order to float in that position, or should seek support from objects close at hand. As a rule, it is a mistake to try to swim to the shore.

Disrobing.—A life saver is advised to remove shoes and any heavy clothing before plunging in to make a rescue. If clothing must be removed in the water, take a deep breath and allow yourself to be submerged while unlacing your shoes. Work at lacing with both hands. Avoid hurried movements, as in the water they will soon exhaust your strength.

After removing the shoes, remove trousers, then jumper or coat. These latter often fill with air and help keep you afloat.

When clothing has been removed swim to the rescue resting on your back if necessary.

APPROACHES

In approaching drowning persons, swimmers should get their attention and reassure them by calling in a loud voice that assistance is at hand.

It is safest to approach a drowning person from the rear. Swim to a point directly behind him, reach one hand under his chin, and pull his head back. At the same time, place the other hand under his back at the base of spine to raise him into a horizontal or floating position. Still holding his chin in one hand,



Rear approach

FIG. 135

start swimming with free hand and scissors kick until body is moving along smoothly, the theory being that a moving body always floats better; then change to carrying position. By this method the rescuer will find that the carry is greatly facilitated.

When it is impossible to approach from the rear, either the underwater or the surface approach can be used. The underwater approach is undesirable where the water is very muddy and it might be difficult to locate the subject under the water.

To make the underwater approach, swim to a point about 6 feet in front of subject, dive under and grasp his knees, turning him about. During the dive, and in



FIG. 136

reaching for subject's knees, keep your arms straight before you to avoid getting close enough to him to have him grasp you with his legs. After turning subject about, come up behind him and proceed as in rear approach.



FIG. 137

To make surface approach, swim toward subject, facing him, reach in with your right hand and grasp his right wrist, or with your left hand grasp his left wrist. While treading water, lean backward, pulling subject toward yourself, quickly spinning him around until his back is turned to you, and then proceed as in rear approach.

CARRIES

Once the proper approach has been made, the subject should be turned into one of the five methods of carrying and his face kept out of the water while he is being carried.

Head carry.—Cover subject's ears with palms of your hands, so that your middle finger rests along his jaw-bone on each side. Holding his chin to arch subject's back, swim, using frock kick or vertical or reverse scis-



FIG. 138.—Head carry

sor's kick. In the latter, the hips are tipped slightly to one side and legs separated as in side stroke, but with upper leg opening backward and under leg forward, reversing the ordinary scissors kick to avoid fouling the subject.

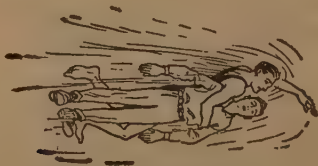


FIG. 139.—Cross-chest carry

Cross-chest carry.—From position back of subject, reach across his shoulder and chest, placing your hand under his farther armpit. (Shoulder blade is more comfortable if you can reach it.) Hold subject so that your hip is directly under center of his back, and his

shoulder tight under your armpit. Swim on your side, using scissors kick and side-arm pull.

This carry is a favorite among life-savers, because subject is completely under control.

Hair carry.—From position back of subject, place your hand at the crown of his head, your fingers toward his forehead, grasping a handful of hair. With your hand in this position he will not roll over. Swim on your side with side-arm pull and scissors kick. Keep your holding arm straight.



FIG. 140.—Hair carry

This carry is especially easy to learn and is optional with the arm-lock carry.

Arm-lock carry.—From position back of subject, reach under subject's near arm and grasp his farther arm at the biceps, or at the wrist if subject is too large. This puts elbow low to raise hips.



FIG. 141.—Armlock carry

Your arm being under subject's back, he is raised high in the water as you swim with scissors kick and side-arm pull.

Keep subject close to you, his near arm pressed tight against you.

Tired swimmer's carry.¹—Simply swim to the subject, telling him to lie on his back and place his hands on your shoulders, with his arms straight and feet spread apart.

Swim breast stroke, using either frog or scissors kick. Watch subject's face.



FIG. 142.—Tired swimmer's carry

RELEASE METHODS

If drowning person is struggling violently, so that it is impossible to subdue him or grasp him with safety, it is well to simply wait for him to exhaust himself before attempting to carry him to safety. Never attempt to strike the subject to render him unconscious. Such a feat is almost impossible in the water. Breaking holds by inflicting pain is impractical also. It may work in practice, but a desperate man, fighting for his life, will not be affected by such methods.

Practice the proper approaches and use them in emergencies to avoid being caught in the hold of a drowning person. The following release methods are effective, and it is advisable to be familiar with them, but the use of the proper approaches will lessen the danger of

¹ This carry is intended only for assisting a person who has become tired. It should never be used on a struggling person.

your being placed in such a position that the release methods will be required.

Each of these methods is followed by the proper turn, getting subject in horizontal position, and starting the carry. In breaking holds let yourself be submerged with subject, performing the break under water. This is done because a drowning person releases a hold more readily under water, his constant desire being to climb to the surface to obtain air. Utilize this tendency to escape.

Front strangle hold.²—You are grasped tightly around the neck from the front, subject's head over your shoulder.



Fig. 1



Fig. 2

FIG. 143.—Breaking front strangle hold

If subject's head is over your right shoulder, put your right hand on his right cheek, little finger against side of nose with thumb hooked under angle of lower jaw, and push his head toward your right and at the same time put your left hand on subject's, encircling arm above the elbow and lift, following through—pushing toward the right. Then duck under this arm as you raise it, and continue pushing with both hands until

² The efficiency of this method depends on the snap with which it is executed. Practice it slowly until you have the technique mastered, then perform the *push*, *lift*, and *duck*, all in one quick movement.

subject is turned with back to you. Proceed as in rear approach.

If subject's head is over your left shoulder, use your left hand on his left cheek and your right hand to lift his left arm.

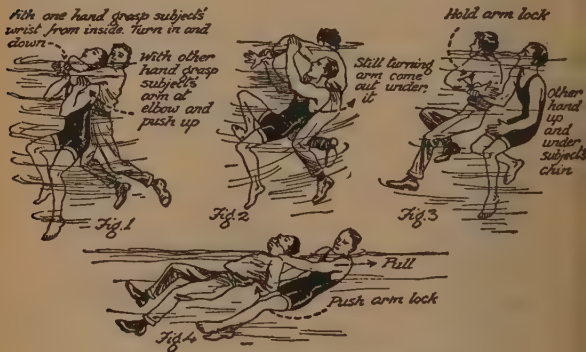


FIG. 144.—Breaking back strangle hold

Back strangle hold.—You are grasped tightly around the neck from the back. Grasp subject's lower hand and *twist* it down and in toward his body. With your other hand, grasp his lower arm at the elbow and *push up*.

Turn your head in the direction you are to turn him, duck *under* this arm as you raise it, and continue twisting his hand until he is turned back to you, and his arm is in hammer lock position, to raise hips. Use other hand for chin pull to get his body flat on sur-

face and swim with hand that held wrist. Shift to cross chest carry.

If subject's left arm is the lower, use your left hand to raise his elbow and your right hand to twist his hand.

If subject's right arm is the lower, reverse the process.

Double grip on one wrist.—Subject grasps your right wrist with both hands. Put your left hand, which is free, on the subject's left with thumb on top and fingers under, ready to pull as soon as your foot is in position. The foot is used to push on the opposite shoulder as the arm is pulled toward you.

Use left foot against subject's right armpit, bringing it over subject's arms. Be careful about kicking subject in the chest or breast. Caution all candidates to push in the hollow of the shoulder and not below it in practice. Straightening the leg as you pull with the left hand gives the necessary force to break the hold. The right wrist naturally turns against the thumb which is holding it.

If you find that you are unable to reach subject's shoulder with your foot, due to your shorter reach, bend your elbow until your foot is in contact.

When the hold is broken, turn into position for rear approach and push body up into a carrying position. Should the left wrist be grasped, reverse the procedure, pulling with your right hand and pushing on the left shoulder with the right heel.

Breaking two people apart.—Two people are clinging together in a front strangle hold. Swim to a point directly behind one of them, and place your hands on throat (Adam's apple); raise one foot over locked

arms of subjects, placing heel under chin of subject facing you against his neck, also pressing Adam's apple; straighten your leg, *push* hard, and pull, separating the two. (Avoid kicking.)

Carry subject you are holding to safety.

Carry from shallow water to shore.—For the fireman's lift, tow subject from deep water to water waist deep. Place subject on his back in a floating position. Standing at his right side, at the waist, place your left hand under his head at the neck. Reach your right arm between his knees from above, grasping his left knee.



FIG. 145.—Breaking two people apart

Duck by bending knees and roll subject face downward over your head as you go under water. Stand up and the patient will be evenly balanced on your shoulders and held in place by your right arm, which is now around his right knee, your right hand clasping his right wrist, leaving your other hand free.

Many people prefer the saddleback carry, which is optional in the test with the fireman's carry. All men should know both carries.

For the saddleback carry, bring the subject to a floating position in waist-deep water. Standing at his right side facing the head, reach your right arm across

the waist from above, lifting his left arm out of the way until it rests upon your shoulders. Continue to reach with right arm until hand is lifting subject's head out of water. Use your left arm to catch both of subject's legs behind knees as you turn, bending him across your hips. The weight should be above your belt line to insure easy balancing.

To lower patient from saddleback position, rescuer kneels on both knees and leans backward until patient rests upon the ground behind heels.



FIG. 146.—Carry from shallow water

LIFTING FROM WATER

To lift a subject from deep water to the edge of a tank, on to a float, or over the stern of a boat, proceed as follows: Hook subject's fingers over the edge, placing one hand on top of the other, resting one of your hands on subject's hands to hold them in place, then climb up on float or side wall and grasp right wrist of subject with your right hand and his left with your left. With subject facing you and with your wrists crossed, raise and lower him several times to gain momentum, and with a final lift pull him out of the water, uncrossing your hands as you land him in a sitting position facing the water. He can then be pulled into a reclining position without difficulty.

SECTION 2.—THE RESUSCITATION OF THE APPARENTLY DROWNED

(1) The prone pressure method of artificial respiration described in these rules shall be used in cases of sus-

pended respiration from drowning. Follow the instructions even if the patient appears dead. Continue artificial respiration until natural breathing is restored or until a physician advises you to discontinue your efforts.

(2) Lay the patient on his stomach, one arm fully extended overhead, the other arm bent at elbow and with the face turned outward and resting on hand or forearm. (This protects the mouth and nose from dirt, provides a slant to head for drainage, and allows tongue to drop forward). (Fig. 147.)

(3) Kneel straddling the patient's thigh, or thighs, with your knees placed at such distance from the hip bones as will allow you to assume the position shown in Figure 147.



FIG. 147.—Artificial respiration. Applying pressure

(4) Place palms of the hands over lower ribs, one on each side of the spine, about 4 inches apart, at right angles to spine, with the thumb and fingers in a natural position. The hands are in correct position when the little finger of each hand is over and following the line of the lowest rib. (Fig. 147.)

(5) Move weight of body slowly downward and forward for three seconds (count 1, 2, 3 slowly); do not let hands slip. Keep arms straight. The shoulder should be behind the hands, so that the pressure exerted is forward as well as downward, and by the "heels" of the hands, and not the fingers. (Fig. 147.)



FIG. 148.—Artificial respiration. Releasing pressure

(6) Release pressure suddenly, removing hands from the chest, allowing chest to expand and fill with air. (Fig. 148.) After two seconds interval (count 1, 2 slowly) repeat pressure. This makes 1 respiration every 5 seconds, 12 per minute. *Do not work faster than this.* After a rhythm is obtained actual counting can be stopped.

(7) During the interval operator can swing back and sit on his heels, thus relaxing muscles of his back. This will enable him to work for a much longer period.

(8) Do not give up! There are cases on record of resuscitation after 30 minutes submersion. There is no certain sign by which you can determine that it is too late for artificial respiration. If no results are

seen the patient should not be abandoned until at least $3\frac{1}{2}$ hours of effort has been made to revive him.

(9) **Supplemental treatment.**—While carrying on artificial respiration organize helpers, but *do not stop artificial respiration for anything*. Send for a physician, blankets, hot-water bottles or heated bricks, hot water or tea or coffee for stimulants (no alcoholics). Have patient's clothing loosened around neck and chest; mouth and nose cleared of any mucus or mud, and tongue moved back and forth occasionally to stimulate reflexes; body and limbs rubbed toward the heart. Have blankets and hot-water bottles applied, but not any hot articles next to the patient's skin. If there is aromatic spirits of ammonia at hand have some poured on handkerchief and placed near patient's nose. Have the crowd that may have collected kept well back, so as to give the patient plenty of air. Select an intelligent helper to watch you and so instruct him that he may be able to take your place when you need a relief.

(10) **When patient begins to breathe, and can swallow,** give him sips of aromatic spirits of ammonia (teaspoonful to one-fourth glass of water), or hot water, coffee, or tea. Do not allow patient to walk or otherwise exert himself; he should be carried to some place where he can be put in bed and receive medical attention.

(11) **Caution.**—Often inexperienced or excited persons attempt to administer artificial respiration when there is no need for such treatment. It is not required when the patient, on removal from the water, is able to breathe. Such cases are in need of treatment for exposure and shock. They should be placed on a slanting surface, head down; covered by blankets and hot

water bottles; stimulated by hot drinks or aromatic spirits of ammonia (teaspoonful to one-fourth glass water); massage of limbs; carried to a bed for further medical attention.

(12) **Summary.**—Save the seconds and you have a better chance of saving the life. Do not waste time carrying patient to a quiet spot. Work where he is taken from the water. Do not waste time trying to get water out of the stomach. *Turn patient face down and go to work immediately.*

SUFFOCATION

Suffocation from foreign bodies in the windpipe, from hanging, and from the inhalation of poisonous gases is treated by removing the cause, and by proceeding with artificial respiration as in the case of suffocation from drowning. A line should be made fast to a man before sending him down into an old well or suspicious excavation, or in the presence of irrespirable gases.

SECTION 3. LIFE BUOYS; HOW THE BUOYS SHOULD BE DROPPED AND WHEN

(a) The Navy Regulations require that at all times at sea and when anchored in a strong tideway in port an efficient person be stationed to let go the life buoy. Except in small ships, one man is usually detailed to each life buoy. At sea these men also act as look-outs. All ships and ship's boats are provided with circular life buoys, which are placed in positions where they can be dropped or thrown overboard in an emergency. Large ships have copper-covered buoys in racks amidships and aft on both sides, with calcium flare pots attached, which can be dropped by pulling a toggle and which show a light as soon as in the water.

In addition to these, ordinary ring life buoys, with or without lifelines attached, are placed on the bridge and aft on the main deck for use if necessary. All men must know how to drop these life buoys and know their exact location on the ship.

(b) To select the proper time to let go the life buoy requires coolness and composure. A cool, intelligent man will let the buoy drop within a few feet of the man overboard; but an excitable man, or one who does not clearly understand his duties, may drop it long before the man is abreast the buoy or long after he has passed. He should try instantly to find out the side on which the man fell and to get sight of him. Then drop the buoy as soon as possible after the man is abreast the buoy, so that it will be between him and the ship toward which he naturally faces and swims. The man at the life buoy can usually determine on which side he fell, as he will see many of the people about the decks go to that side. Then to avoid the possibility of dropping the life buoy on the man (instances have been recorded where men have thus been killed), the opposite buoy should be dropped when it is adjudged to be abreast of the man in the water. If it is seen that the second buoy can be dropped nearer to him, it should be let go; but, as a general rule, the second buoy should be kept fast (unless it is really necessary) for use in case men fall overboard in lowering or hoisting the lifeboat. The man in the water should swim to the life buoy and await the lifeboat. Life buoys should be dropped frequently when the crew are in swimming in order to familiarize the men with their use. The life-buoy men should keep the man overboard in sight until the persons especially detailed for this purpose reach their station.

CHAPTER 31

SUBJECT N.—ATHLETICS

THE ATTENTION GIVEN TO ATHLETICS ON BOARD SHIP

(a) Athletics, being an important factor in the development of good morale, are encouraged both ashore and afloat. Every effort is made by commanding officers to form as many teams covering the various sports as is possible in their organization, so that the benefits of athletics may be enjoyed by the greatest number of men. Every facility is given enlisted men to take part in athletic contests, not only between ships and stations but in competitions with outside teams. However, participation by ship or station teams in athletic sports by individuals in professional boxing and similar contests over which commandants, commanders in chief, or commanding officers have no jurisdiction shall not be allowed. No men shall be allowed to accept money for services as members of athletic teams. Athletics in our Navy are run on the same principles as obtain in all universities and colleges, and the amateur standing of all contestants must be carefully maintained.

(b) United States Fleet athletic organization.—The commander in chief, United States Fleet, in order to standardize and regulate the conduct of United States Fleet athletic competitions, issues general regulations covering all athletics. All fleet and force commanders under the commander in chief, United States Fleet,

issue athletic rules and regulations for their commands in accordance with these general regulations. A United States Fleet athletic board consisting of the chief of staff, United States Fleet, and the athletic officer of each fleet and force unit supervises all athletics in our Navy.

(c) **Fleet and force athletic organization.**—Each fleet and force have athletic boards consisting of the fleet or force athletic officers and the athletic officers of the various units under them.

(d) **Ship or station athletic organization.**—Each ship and station has an officer in charge of athletics. He appoints other officers to assist him and to take charge of the various athletic teams. In this manner a large number of both officers and men are actively engaged in athletics.

GENERAL PROHIBITIONS

(1) No man shall be eligible for participation in any United States Fleet athletic event who is not regularly attached to and serving on board a ship of the fleet.

(2) No cash prizes shall be given on board ship or ashore. To accept cash prizes puts the contestant in the professional class and all Navy athletics are strictly amateur.

(3) Men who engage in contests ashore that jeopardize their amateur status shall be deprived of all training privileges on board ship and furthermore shall be barred from competitions in the United States Fleet boxing or wrestling championships.

(4) Officers are not permitted to enter field and track meets, swimming races, boxing bouts, or similar events. One officer shall be permitted to take part as a member of a baseball, football, and basket-ball team. If one officer is taken out of a game, another officer may be

substituted. This prohibition, however, does not apply to warrant officers. Officers, including warrants, are not permitted to act as coxswain in any official United States Fleet pulling race.

GOVERNING RULES

The rules governing all United States Fleet athletic contests will be those outlined in the Athletic Rules United States Fleet.

NOTE.—Our Navy has won a place in athletics which is not surpassed by any university or college in our country. It must be the duty of all officers and men to see that this high standard is never jeopardized by stains of professionalism or by any unsportsmanlike conduct on the athletic field. Rooting parties should encourage their team to the bitter end, but at the same time give good-hearted and full credit to their opposing team and never use abusive or unsportsmanlike methods toward them.

UNITED STATES FLEET CHAMPIONSHIP

When the United States Fleet is in company, the commander in chief will arrange for a series of fleet championships in as many athletic events as may be practicable. For United States Fleet championships the United States Fleet is divided into two units, as follows:

Unit A.—Scouting Fleet, Control Force, Train Squadron One of the fleet base force, and the United States Fleet flagship when operating with the Scouting Fleet.

Unit B.—Battle Fleet and the fleet base force, less Train Squadron One, and the United States Fleet flagship when operating with the Battle Fleet.

The commander Scouting Fleet and the commander in chief Battle Fleet will conduct eliminations for the above two units and nominate the entries for the events to the commander in chief, United States Fleet.

UNITED STATES FLEET CHALLENGES AND UNITED STATES FLEET TROPHIES

United States Fleet trophies will be competed for when the United States Fleet is in company and will not ordinarily be subject to challenge at other times. The following trophies (these change from year to year) are available for United States Fleet competitions:

(1) Commander in chief's United States Fleet championship baseball trophy.

(2) Commander in chief's boxing trophy.

(3) Commander in chief's wrestling trophy.

(4) Commander in chief's swimming trophy.

(5) Commander in chief's boat-racing trophy to be awarded the ship scoring the greatest total number of points in all pulling races.

(6) Commander in chief's pulling trophy for marine whaleboats.

(7) Commander in chief's pulling trophy for dinghies.

(8) Commander in chief's pulling trophy for destroyer whaleboats.

(9) Commander in chief's trophy for 30-foot whaleboats.

(10) Commander in chief's pulling trophy for racing cutters.

(11) Commander in chief's trophy to the destroyer scoring the greatest total number of points in all United States Fleet contests.

(12) Commander in chief's trophy to the submarine scoring the greatest total number of points in all United States Fleet contests.

(13) Commander in chief's trophy to the auxiliary, fleet base force, scoring the greatest total number of points in all United States Fleet contests.

(14) Commander in chief's officers' tennis trophy.

(15) Commander in chief's officers' golf trophy.

(16) General excellence trophy.

SPORTS HELD IN THE NAVY

The detailed regulations for the various sports will not be given here. They will be found available on each ship, and the athletic officers will be glad to give men who are interested this information at any time. The following sports are held in the Navy:

Baseball, football, boxing, wrestling, rifle matches, pulling races, sailing races, swimming races, field and track, basket ball, tennis, and golf.

THE PRESTIGE ATTENDANT UPON VICTORY

(a) A healthy athletic spirit aboard ship puts a never-say-die spirit into the whole ship's company. It tends to make that ship's company a unit, a unit which will never give up, and which will carry that ship over all difficulties. It develops an esprit de corps that will carry the ship to high achievements in every other line of duty. As the spirit, the fight, the success of athletic teams of universities and colleges have made them the beacon by which its students have been led to big achievements in life, so do our athletic teams inspire in all of us that spirit which leads us all to do the big things required of us.

(b) Competition between ships of the various forces are held in most sports. Points are assigned for winning or placing in each event, and the ship having the

highest total is assigned the general excellency trophy for her class. A ship standing high in athletics in our Navy represents an achievement equal to that of any university which stands high in athletics amongst universities of her class.

VARIOUS TROPHIES AWARDED

The following trophies, in addition to those awarded by the commander in chief, United States Fleet, are awarded to ships on the west coast by the commander in chief, Battle Fleet:

Trophies available for competition are as follows:

- (1) General excellence trophy:
 - (a) Department trophy.
- (2) Baseball:
 - (a) Department trophy.
 - (b) Knights of Columbus cup.
 - (c) Our Navy trophy.
- (3) Football:
 - (a) Department cup.
 - (b) Department trophy.
 - (c) Knights of Columbus cup.
- (4) Swimming championships' medals.
- (5) Pulling races:
 - (a) Olympic cup.
 - (b) Marine challenge cup.
 - (c) Seattle cup.
 - (d) Destroyer Squadrons' cup.
 - (e) Vallejo cup.
 - (f) Los Angeles cup.
 - (g) Knights of Columbus Bremerton cup.
 - (h) Shriners cup.
 - (i) Commander in chief trophy and cups.

(6) Sailing races:

(a) Los Angeles Times trophy.

(7) Basket ball:

(a) Commander in chief trophy.

(8) Boxing:

(a) Lightweight championships—Belts and medals.

(b) Knights of Columbus cup.

(9) Wrestling—Belts and medals.

(10) Rifle—Department trophy.

The following listed trophies are awarded to ships of the United States Scouting Fleet:

BATTLESHIPS

(1) General excellence trophy:

(a) Department trophy.

(2) Baseball:

(a) Department trophy.

(3) Football:

(a) Department trophy.

(4) Field and track:

(a) Department trophy.

(5) Boat races:

(a) Atlantic challenge trophy.

(b) Commander Scouting Fleet sailing trophy.

(c) British Navy challenge cup.

(d) Department pulling trophy.

(e) Dunlap cup.

(f) Commander Scouting Fleet free-for-all sailing trophy.

(5) Boat races—Continued.

(g) Commander Scouting Fleet whaleboat sailing trophy.

(h) Chapin cup.

(i) C. S. F. sailing launch cup.

(j) Barnett cup.

(k) Drexel cup.

(l) Vincent Astor trophy.

(6) Marksmanship:

(a) Department small-arms marksmanship cups.

(b) Auckland cup.

(c) Buechele cup.

(7) Basket ball:

(a) Commander Scouting Fleet trophy.

(8) Swimming:

(a) Assistant Secretary of the Navy's cup.

(9) Signaling:

(a) Correspondent's cup.

(10) Golf:

(a) Commander Scouting Fleet trophy.

LIGHT CRUISERS

(1) General excellence trophy:

(a) Commander Scouting Fleet trophy.

(2) Baseball:

(a) Commander Scouting Fleet trophy.

(3) Football:

(a) Commander Scouting Fleet trophy.

(4) Field and track:

(a) Commander Scouting Fleet trophy.

- (5) Boat races:
 - (a) Commander Scouting Fleet pulling trophy.
 - (b) Commander Scouting Fleet sailing trophy.
 - (c) C. S. F. free-for-all trophy.
- (6) Marksmanship:
 - (a) None (must compete with battleships for their trophy).
- (7) Basket ball:
 - (a) Commander Scouting Fleet trophy.
- (8) Swimming:
 - (a) Commander Scouting Fleet trophy.
- (9) Signaling:
 - None.
- (10) Golf:
 - (a) Commander Scouting Fleet trophy (must compete with battleships).

DESTROYERS

- (1) General excellence trophy:
 - (a) Commander Scouting Fleet trophy.
- (2) Baseball:
 - (a) C. S. F. trophy.
- (3) Boat races:
 - (a) Department pulling trophy.
 - (b) Commander Scouting Fleet pulling trophy.
- (4) Marksmanship:
 - (a) Must compete with battleships for their trophies; destroyers will compete by squadrons.

- (5) Basket ball:
 - (a) Commander Scouting Fleet trophy.
- (6) Swimming:
 - (a) Commander Scouting Fleet trophy.
- (7) Signaling:
 - None.
- (8) Golf:
 - (a) Commander Scouting Fleet trophy
(must compete with battleships).

TRAIN

- (1) General excellence trophy:
 - (a) Commander Scouting Fleet trophy.
- (2) Baseball:
 - (a) Commander Scouting Fleet trophy.
- (3) Football:
 - (a) Department trophy.
- (4) Boat races:
 - (a) Commander Scouting Fleet pulling trophy.
 - (b) Commander Scouting Fleet sailing trophy.
- (5) Marksmanship:
 - (a) Department small-arms marksmanship cups.
 - (b) Auckland cup.
(Must compete with battleships.)
- (6) Basket ball:
 - (a) Commander Scouting Fleet trophy.
- (7) Swimming:
 - (a) Commander Scouting Fleet trophy.
- (8) Signaling:
 - None.

(9) Golf:

(a) Commander Scouting Fleet trophy
(must compete with battleships).

(10) Air squadrons and control force. No inter-ship trophies available but entire control force and air squadrons may each form one team and compete for fleet championships.

MEDICAL OFFICER

A medical officer, detailed by the commander in chief, attends all United States Fleet boxing contests. This officer has authority to stop any contest. He is specifically notified of the duty and attendant authority.

No man may enter a boxing contest until he has been examined on the day of the contest by a medical officer of the Navy and pronounced by him physically fit for the contest. The contestant secures a certificate from the surgeon making the examination and presents it to the referee.

Previous to every bout contestants are weighed and stripped by the referee between 9 and 10 o'clock on the day of the bout. Contestants who fail to make the required weight the first time weighed forfeit the bout. Each contestant is furnished a certificate of weight by the referee to be presented at the ringside if demanded.

Entries failing to qualify as to weight or failing to appear at the scheduled times of a contest thereby forfeit the bout.

CLEAN SPORTSMANSHIP

The following excerpt from the Battle Fleet athletic rules is quoted for the information of "all hands," as

the expressions therein set forth should be the guide for us in all our athletic competitions:

“The commander in chief desires to urge upon all that athletic competition, unless it is characterized by clean sportsmanship, free from any taint or suspicion of sharp practice, and free from any unfriendliness, is not the spirit of true Americanism, which is to play fair and give a square deal. Winning or losing, the main thing is to show yourselves good and clean sportsmen—modest winners if the breaks are with you, and good losers if the breaks are against you.”

PART THREE

RUDIMENTARY SEAMANSHIP AND GUNNERY

CHAPTER 32

BOATS; TYPES, NOMENCLATURE; BOAT ETIQUETTE; GEAR; COMMANDS FOR BOATS UNDER OARS AND SAILS; DUTIES OF BOAT KEEPER

TYPES OF BOATS IN THE NAVY

Vessels of the United States Navy are supplied with one or more of the following classes of boats:

Motor barges.	Cutters.	Wherries.
Motor boats.	Racing cutters.	Punts.
Motor launches.	Whaleboats.	Life floats.
Motor dories.	Dinghies.	

Boats of special type in use are classified as follows:
Sea sleds (airplane rescue boats).

Special motor launches for surveying (survey ships).

Torpedo retrievers (special design 40-foot retriever boats for shore station torpedo testing ranges).

Motor whaleboats for special purposes.

General remarks.—The size of ships' boats is indicated by their over-all length in feet. A few inches longer or shorter than the nearest even number of feet is to be ignored when stating the length for identification; for example, a 28-foot cutter, a 50-foot motor launch, etc. The following is the length (in feet) of the boats now supplied to vessels:

Motor barges, 40 feet; motor boats, 50, 40, 35, 26 feet; motor launches, 50, 40, 36, 33, 30, 24 feet; motor dories, 21 feet; cutters, 28 feet; racing cutters, 31 feet; whaleboats 30, 28, 24 feet; dinghies, 20, 16 feet; wherries, 14, 12 feet; punts, 14, 12, 10 feet.

Motor barges.—These are specially built boats for use of flag officers. They are therefore found on flag-ships only and are transferred with the flag.

Motor boats.—These boats are not fitted to mount a gun as was the case on the old steamers. They are not fitted with sail power nor have they rowlock sockets. An oar for emergency steering in case of loss of rudder should be carried. These fast motor boats are used for carrying officers, dispatch and mail service. A motor boat used by a commanding officer is known as a "gig."

Motor launches are heavy working boats with square sterns. They are all fitted to mount a light rapid-fire or machine gun in the bow, except the 24-foot boat. They are supplied with oars, and instead of rowlocks they have grommets and thole pins; by double-banking the oars a considerable speed may be attained. These boats are especially designed for ships' heavy work, such as carrying stores or large liberty parties or landing force, carrying out anchors, weighing kedge anchors. They are frequently used for survey work. Motor launches are fitted to carry sails and carry practically the same outfit as the former sailing launches. In addition, they must carry the running lights, bell, foghorn, whistle, chemical fire extinguishers, etc., required by the motor boat law for the respective sizes. The use of awnings has been discontinued on these boats. The canopies which supplanted awnings are not now fitted except in special cases. The 24-foot motor launch is fitted with double standing lug rig for sailing, and is the size usually issued to destroyers. The 40, 36, 33, and 30 foot motor launches are sloop-rigged. Sails are no longer issued to 50-foot launches assigned to the fleet, and where a vessel has

several motor launches assigned, only two of these will be provided with sails.

Cutters are double-banked, square-sterned boats, with finer lines than launches, pulling 10 oars, and fitted with sunken oar ports. The manufacture of all cutters except the 28-foot has been discontinued. There will be very few issued in the future. They are no longer used as running boats, except possibly in tow. Their sailing rig is the double standing lug rig, without jib.

Racing cutters are not furnished with sails.

Whaleboats are double-ended and may be either single or double banked, pulling 5 or 6 oars single-banked or 12 oars double-banked, respectively. These boats are no longer used as running boats, except possibly in tow. They are fitted with swivel rowlocks. Their sailing rig is the double standing lug rig, without jib. The whaleboat on destroyers is the only boat that is provided with sails. In port, whaleboats are steered with a rudder, but at sea are fitted with a steering oar passed through a steering rowlock -on the quarter. These boats are therefore particularly adapted for use at sea and are generally used as lifeboats.

Dinghies are small handy boats, shaped like cutters, single-banked with four oars. These boats are now rarely used as market boats because motor launches are better for that duty. Owing to the small crew required, they are particularly convenient for nearly all light work in port. They carry sails and are sprit-rigged.

Wherries are light handy boats. They can be pulled by one man and are not furnished sails.

Punts are rectangular flat-bottomed boats, intended for painting and general cleaning around the ship's

water line. They are fitted with rowlocks on each side, but are usually propelled by sculling.

Life floats (sometimes called life rafts) are elliptical in shape, constructed either with a metallic tube covered with cork and canvas or made of balsa wood or other suitable material. They were constructed in four sizes, of 67, 41, 28, and 20 person capacity. Each carries two 5-foot paddles. The floats are supplied to hospital ships, destroyers, mine sweepers, mine planters, troop transports, ammunition ships, fuel ships, repair ships, supply ships, and tenders.

Power boats are classified as follows:

- (1) Motor barges.
- (2) Motor boats.
- (3) Motor launches.
- (4) Double-ended power boats, whaleboat type, as motor whaleboats.
- (5) Power dories as "motor dories."

NOMENCLATURE

Names of the parts of a boat are given in Part I, page 153. All men must know these names.

BOAT ETIQUETTE

Enlisted men who are passengers in the stern sheets of a boat shall always rise and salute when a commissioned officer enters or leaves the boat. They shall maintain silence if there are officers in the boat.

Juniors always get into the boat before and leave it after their seniors, unless the senior officer in the boat gives orders to the contrary.

As a general rule, the seniors take the seats farthest aft; the juniors will leave such seats for their seniors.

The position of attention in a boat is sitting erect on thwart or in stern sheets.

At landing places officers are saluted by the crew of a pulling boat by sitting at attention and by the coxswain rising and saluting with the hand.

BOAT GEAR AND EQUIPMENT

BOAT GEAR—PULLING BOATS

The following boat gear shall be carried by pulling boats at all times, except when special circumstances render it undesirable:

(1) Anchor, with chain or line bent and ready for use.

(2) Boat painter.

(3) Stern fast.

(4) One complete set of oars. If swivel rowlocks or thole pins and grommets, which do not permit tossing, are used, each oar must be fitted with a trailing line.

(5) Spare oars for one thwart (fitted with trailing line if the above-described rowlocks are used).

(6) Three boat hooks, except dinghies and wherries, two.

(7) Spars, sails, and rigging, in spar cover complete, ready for use. (Spars and sails are not furnished for racing cutters, dories, or wherries. They are furnished for only whaleboats on destroyers or torpedo boats.)

(8) Awnings and stanchions if climatic conditions demand. (They are not furnished for racing cutters or dories.)

(9) Boat bucket for bailing and for general use.

(10) Breakers with a quantity of fresh water equal to at least one-half gallon for each person in the crew.

(11) One set of stretchers complete.

(12) Canvas bag containing a boat ensign and staff, a pair of semaphore flags on staffs, one answering pennant and staff, one boat-distinguishing flag and staff and in case of a special boat, appropriate flag or pennant and staff.

(13) Boat compass (when boat is in the water).

(14) Boat box. (Boat boxes are not furnished for dinghies, dories, or wherries, or for boats issued to destroyers or torpedo boats.)

(15) Tin box with cover for cleaning gear.

(16) Key to boat box.

(17) Rudder and tiller, each fitted with a light lanyard.

(18) Plug, secured to keel by a good lanyard.

(19) One set of rowlocks, and two spare ones (if swivel rowlocks are used), each fitted with a short lanyard.

(20) One set of boat fenders, fitted with lanyards.

(21) A tarpaulin and two grapnels fitted with chain or rope are supplied for each boat for use if needed.

(22) When a boat is to be absent from the ship after dark it shall carry a deck lantern ready for use in addition to the boat signal lantern in the boat box.

The compass, unless secured in boat, shall habitually be kept in the navigator's storeroom when the boat is not in the water. The remainder of the boat gear shall habitually be kept in the boat. Water in breakers shall be renewed from time to time, to keep it palatable and healthful.

MOTOR BOATS

The following articles form the complete equipment of a motor boat, and shall be carried at all times except when special circumstances render it undesirable:

- (1) Anchor, with chain or line bent and ready for use.
- (2) Boat painter.
- (3) Stern fast.
- (4) Two oars, with rowlocks, or grommets and thole pins (for long trips and when abandoning ship).
- (5) Three boat hooks.
- (6) Boat bucket.
- (7) Breaker, filled with drinking water (same amount as for pulling boats).
- (8) Canvas bag containing a boat ensign and staff, a pair of semaphore flags on staffs, one answering pennant and staff, one boat-distinguishing flag and staff and in case of a special boat, appropriate flag or pennant and staff.
- (9) Boat compass.
- (10) Boat box, complete.
- (11) Tin box, with cover, for cleaning gear.
- (12) Key to boat box.
- (13) Puddings or fenders.
- (14) Cushions and cushion covers.
- (15) Necessary fuel, lubricating oil, waste, etc.
- (16) Lantern, trimmed, filled, and ready for lighting.
- (17) Necessary tools for service of engines.
- (18) Two circular life buoys, one aft and one forward, neatly secured where readily detachable.
- (19) Life jackets in the stern sheets.
- (20) Running lights, fog horn, fog bell, whistle, etc., as required by "Rules of the Road."
- (21) Two hand grapnels, fitted with chain or rope.
- (22) A bucket of sand for extinguishing gasoline fires (for gasoline boats).
- (23) Chemical fire extinguishers.
- (24) Tarpaulin.

MOTOR LAUNCHES, MOTOR WHALEBOATS, AND MOTOR DORIES

These boats shall carry the following equipment at all times, except when special circumstances render it undesirable:

(1) All equipment carried by pulling boats of a similar type, except that the use of awnings has been discontinued on motor launches and the canopies which supplanted awnings are not now issued except in special cases. Sails are no longer issued with 50-foot motor launches assigned to the fleets, and where a vessel has several motor launches assigned, only two of these will be provided with sails.

(2) Running lights, foghorn, fog bell, whistle, etc., as required by "Rules of the Road."

(3) A bucket of sand for extinguishing gasoline fires.

(4) Chemical fire extinguishers.

(5) Necessary fuel, lubricating oil, waste, etc.

(6) Necessary tools for service of engine.

(7) Life jackets underneath the seats.

(8) Two circular life buoys (motor dories one).

LIFEBOATS, HOW SECURED FOR SEA, LOWERING, HOISTING

The following instructions regarding lifeboats apply to the ratings of seaman, second class, and seaman, first class. They give the detailed instructions which apply to individual members of the crew. The subject will be taken up in more detail in chapter 44.

How secured for sea.—A lifeboat is secured for sea and ready for lowering when in the following condition: Boat at the davits, griped in, falls clear, detach-

ing apparatus ready for detaching at the word, steering oar shipped in crutch, oars fitted with trailing lines and ready for getting out quickly, rowlocks shipped and fitted with lanyards, plug in, sea painter brought aboard the boat through the bow rowlock on the side of the boat toward the ship and a turn around second thwart secured with a toggle, life lines bent to the span, life jackets in boat, lantern filled and trimmed (and at night lighted), and other articles of lifeboat equipment in the boat and ready for use, with two days' water and provisions for the crew.

Mustering lifeboat's crew.—The lifeboat's crew is mustered at the beginning at each night watch. After muster, the crew must remain near the station and be ready to man the boat at a moment's notice. Men of the lifeboat's crew must remember that on them and on how well they do their duty depends the life of any of their shipmates who may fall overboard. It sometimes happens that members of the crew get careless, due to nothing happening, and leave their stations without proper authority. This is not only a neglect of duty of the worst kind but is also a criminal neglect, for it means the probable sacrifice of a shipmate's life in an emergency. Members of a lifeboat's crew occupy a most important duty station, one demanding expert knowledge of every member of the crew and one filled with grave dangers unless everyone does his duty correctly at the right time. When a lifeboat crew is mustered the men fall in abreast their boat (or the lee boat), facing inboard, in the order of their thwarts. The men stationed to lower muster at their respective davits, and will personally see that the falls are clear. The men detailed to observe the man and for signaling, etc., muster abaft the stroke oarsman.

Duties of members of crew at lowering.—As soon as the crew gets in the boat all put on their life jackets and see that their oars and knotted life lines are clear and ready for use. Bowman tends forward fall to keep it clear and unhooks it at the order from the officer or petty officer in charge of the boat. The forward fall must never be unhooked until after the after fall is unhooked. After unhooking, the bowman keeps the block clear of the rest of the crew until the boat is well clear.

Second bowman tends the sea painter. As soon as he gets to his station and has his life jacket on, he takes the sea painter, which is held by a toggle half-hitched to the second thwart, and unfastens it. Leading it through the inboard bow rowlock, he takes in the slack and takes a turn round the inboard end of second thwart. He keeps the end in hand; it should never be made fast. The boat rides to the sea painter after unhooking and the coxswain sheers the bow out by throwing the stern in as the boat strikes the water. The second bowman lets go the sea painter on order from the officer or petty officer in charge of the boat.

Stroke oar tends after fall in same manner as explained for bowman. The after fall is always unhooked first. The stroke oar must be especially careful to keep his falls, after unhooking, clear of the coxswain so that the coxswain will not be bothered with it. The most dangerous part in lowering is at the time of unhooking, when the boat may be smashed against the ship's side. The coxswain must be free at this time to use all his energies to get the boat away from the ship's side.

Other oarsmen see that all oars are clear for getting out. They must be especially careful that the oars are not foul of the lanyards. If the ship is rolling considerably, the waist oarsmen must keep the boat off

the ship's side with boat hooks, being careful to keep the butt ends above the outer gunwale to avoid the danger that the boat will be driven against one and it will stave a hole in the boat's planking. As soon as the boat is clear of the ship's side, these thwartmen get out their oars.

Men stationed at falls for lowering will lower at the command of the officer of the deck or the officer or petty officer in charge of lowering. They must lower away together, keeping the boat on an even keel. When the boat is near the water, the officer or petty officer in charge of lowering will command "Let go," when both falls will be quickly thrown off the cleats. Men on the falls must watch their own cleats carefully while lowering to prevent the falls from slipping off and dropping the boat.

Duties of members of crew on hoisting.—The boat is brought alongside abreast the davits close enough so that a heaving line attached to the sea painter can be hove aboard.

Bowman boats oars and stands by to receive sea painter. On receiving sea painter, he takes a round turn on the inboard side of the second thwart and keeps end in hand. At this point oars are boated and second bowman takes the sea painter while bowman stands by to hook the forward fall. The boat is hauled up under the davits by men manning the sea painter on deck.

Waist oarsmen keep boat off ship's side, using boat hooks if necessary.

Bowman hooks forward fall first.

Stroke then hooks after fall.

NOTE.—If ship has much way on, a line will be passed to stern of the boat which the second stroke will tend by taking a turn around after thwart. This line will lead well aft on

the ship and will prevent the boat from lurching forward as it leaves the water. After the boat leaves the water, and if their duties permit, all members of the lifeboat crew should take as much weight off the falls as possible by taking their weight up on their individual life lines.

TO PULL AN OAR

Every sailor should know how to pull an oar properly. The movements of a complete stroke, for purposes of explanation, are divided into five positions. A full description of these positions with pictures illustrating them is given in Part I, chapter 11, page 147. A study and practice of these positions will enable anyone to learn our Navy's standard stroke in a short time.

BOAT COMMANDS UNDER OARS

A description of the boat commands under oars is given in detail in Part I, chapter 10, page 129.

BOAT COMMANDS UNDER SAIL

DRILL FOR NAVY STANDING LUG RIG (NO JIB)

1. BEING UNDER OARS, TO MAKE SAIL

COMMAND

DUTIES

(a) **Way enough**----- Oars are boated as before described.

(b) **Stand by to step masts** All hands cast off spar covers and unlash sails from masts.

Starboard thwartmen launch mainmast forward until heel of mast is even with step; halyard sheaves fore and aft, standing part of the halyards abaft the mast, and raise the masthead slightly.

Similarly, port thwartmen launch foremast to position and raise the masthead slightly.

The crew remain seated whenever their duties will permit, always *keeping down in the boat.*

COMMAND

DUTIES

- (c) Step the masts**-----Starboard thwartmen stand on bottom boards and raise mainmast.
 Port thwartmen stand on bottom boards and raise foremast.
 Bow and stroke oarsmen get masts on proper slew and when nearly vertical guide them into the steps.
 Bow and stroke oarsmen and second bow and second stroke set up shrouds.
- (d) Stand by to make sail** Starboard thwartmen light the main-sail aft and hook on the yard; second starboard stroke secures the jaws of the main boom in place.
 Second port stroke stands by to hoist away on the halyards.
 Port thwartmen clear away the fore-sail and hook on the yard; starboard bowman lashes tack of fore-sail to eyebolt in foremast; port bowman stands by to hoist away on halyards.
 Men most convenient pass sheets aft on their respective sides and tend them.
 Starboard stroke reports when ready aft.
 Starboard bowman reports when ready forward.
- (e) With starboard (or port) sheet, make sail.** Hoist yards chock up, lugs to leeward.
 Haul aft sheets on the designated side and tend them—never belay.
 Bowmen keep a bright lookout ahead and report promptly the proximity of dangers.
 Station two men under foot of fore-sail, distribute the remainder of the crew as necessary to give the boat best trim for sailing and handling.
 Constantly bear in mind that a boat will sail and handle her best when making good headway through the water.

2. To TACK

COMMAND

DUTIES

- (a) **Ready about**----- Given as a warning to the crew to prepare for the evolution. The coxswain gives the boat a good full, waits for a smooth time, then *eases* down the tiller. At the same time the man tending the mainsheet hauls the main boom amidships slowly. (Care must be taken not to haul it across the midship line, for it will then act as a back sail.) Keep sails drawing and boat going ahead as long as possible. As the boat's head comes to the wind the man tending the fore-sheet takes in the slack as it comes to him.
- (b) **Shift over fore-sheet**—As the boat's head passes the wind and the foresail fills from the new side, the men under the foresail grasp the foot of it and carry it bodily across *with the wind*; not forcing it over, but carrying it with the wind, keeping it from flapping and shifting the sheet smartly as the foot of the sail goes across. If the boat gathers sternboard, shift the tiller.
- (c) **Haul aft sheets**----- When the boat has passed the wind and is on the new tack, trim the sails as desired. It is not necessary to dip the lug in going about. However, in making a long board on one tack, it may be worth while to dip the lugs to leeward as the sails will stand a little better. This can usually be done without touching the halyards, a man grasping the luff of the sail and the forward end of the yard and bearing down on them while the sheet is slack.

3. To WEAR

COMMAND

DUTIES

- (a) Stand by to wear----Given as a warning to the crew to prepare for the evolution. The coxswain puts the tiller up when ready.
- (b) Ease off the main-sheet.-----Given as the boat's head pays off, in order to get the maximum effect of the mainsail in increasing her headway. Keep fast fore-sheet until wind is abeam as it helps pay her head off.
- (c) Ease off fore-sheet--Given when wind is abeam. Slack off the sheet gradually to give headway.
- (d) Up mainsail-----Given when the wind comes nearly aft. Top up the main boom. This is unnecessary in a light breeze, but in a moderate breeze or anything stronger it should be done on account of the danger of gybing. In a strong breeze give the order "Down mainsail" and lower the mainsail.
- (e) Shift over the sheets.-----Given when wind is aft. Stand by to haul sheets aft on new side.
- (f) Down mainsail-----Given when wind is a little on the new weather quarter. Set mainsail and haul aft mainsheet, leave fore-sheet flying or smother sail into the mast, so boat's head will come up rapidly.
- (g) Haul aft fore-sheet--Given as boat comes by the wind on the new tack. Haul aft fore-sheet and trim both sails.

4. To HEAVE-TO

Heaving-to is not practicable unless there is a jib.

5. To REEF SAIL

COMMAND

DUTIES

- (a) **Stand by to reef**----- Given as a warning to the crew to prepare for the evolution. Tend halyards. Prepare earings and reef points. The coxswain brings boat by the wind in order to retain head way and keep the boat under control while reefing.
- (b) **Reef sail**----- The coxswain luffs slightly. Halyards are slacked down just enough to pass reef earings and reef points. Secure reef earings and pass reef points around foot of sail, not around boom.
- (c) **Make sail**----- Given when ready. Men at halyards hoist sails and coxswain lays the boat on the desired course. When a boat begins to take water it is time to reef. She should never, even in smooth water, be allowed to heel too much.

6. To SHAKE OUT REEFS

- (a) **Stand by to shake out reefs.** Given as a warning to the crew to prepare for the evolution. Tend all halyards. Coxswain brings the boat by the wind.
- (b) **Shake out reefs**----- Coxswain luffs slightly. Halyards are slacked down just enough to cast off earings and reef points.
- (c) **Make sail**----- Men at halyards hoist sails and coxswain lays the boat on the desired course. Keep boat under control at all times.

7. To SHORTEN SAIL (AS FOR A HEAVY SQUALL)

- (a) **Stand by to shorten sail.** Given as a warning for the crew to prepare for the evolution. Tend halyards. The coxswain lays boat by the wind.

COMMAND

DUTIES

- (b) Shorten sail-----The coxswain luffs. The yards are lowered. Crew await next command, which may be either to make sail or to furl sail.

8. TO TAKE IN SAIL

- (a) Stand by to shorten sail.
- (b) Shorten sail-----Proceed as described above for this evolution.
- (c) Furl sail-----Cast off fore tack and jaws of main boom. Starboard thwartmen unhook and furl mainsail, using the sheets as gaskets; similarly, the port thwartmen unhook and furl foresail.
- (d) Stand by to unstep-----Cast off shrouds. Starboard thwartmen prepare to receive the mainmast; port thwartmen prepare to receive foremast.
- (e) Unstep-----The bow and stroke oarsmen seize their respective masts and lift them vertically until they are clear of the thwarts, at the same time inclining them in the proper directions. They are then lowered, foremast on port side, mainmast on starboard side. Men amidships standing on bottom boards to receive and stow them. The crew then place foresail and mainsail along their respective masts, lash them with the shrouds, and quickly take their seats on the thwarts.

MEANING OF TRIM, REEFING, RUNNING BEFORE THE WIND, TACKING, WEARING, GYBING

- (a) Trim.—By trim is meant the difference in draft, forward and aft. If the draft is greater forward we

say the boat is "down by the head." If the draft is greater aft, we say the boat is "down by the stern."

(b) **Reefing.**—Furling part of a sail and securing it while using the remainder of the sail. This is done when a strong or gusty wind might capsize the boat with all sail spread. The reef points are always passed under the foot of the sail; never around the boom.

(c) **Running before the wind.**—A term used when the wind is abaft the beam.

(d) **Tacking.**—Going about. The tiller is put to leeward so that the boat's head goes through the wind, and the sails fill on the opposite side.

(e) **Wearing.**—Going about. The tiller is put to windward so that the boat's head goes away from the wind, the sails gybe, and the boat comes close-hauled on the opposite tack. Wearing is opposite to tacking.

(f) **Gybing.**—While the boat's head is away from the wind, allowing the wind to get on the opposite side of the sail, causing it to swing violently across the boat. This is especially dangerous if the sail has a boom. Sometimes gybing is intentional as in wearing; sometimes it is unintentional and results from yawing, bad steering, or squalls.

THE DUTIES OF A BOAT KEEPER; SALUTES REQUIRED OF A BOAT KEEPER

(1) Boat keepers are detailed by the coxswain of the boat, two men being assigned for one day, in order that they may relieve each other.

(2) Both boat keepers of a running boat clean her out during the morning watch. Boats must be in all respects ready for use by 8 a. m.

(3) The boat keeper of the forenoon watch goes into his boat (when at boom) at 8 a. m., dressed in the uniform of the day.

(4) One of the boat keepers is always to be in his boat when she is at the boom, while the ship's colors are hoisted, unless ordered by the officer of the deck to come on board on account of bad weather. If ordered in on this account, they will remain on deck in sight of their boats and watch and tend them from that position.

(5) They should be careful that the oars and other gear in their boats are always neatly placed. They shall wipe out their boats and touch up the bright work as often as necessary. They shall, if necessary, haul their boats up to the boom in order to clear boats coming alongside the gangway.

(6) When not working in the boat, boat keepers shall always sit up and shall never lounge or read.

(7) When boat awnings are not spread they are to stand up and salute all officers who pass their boats, or who come alongside, or leave the gangway.

(8) If awnings are spread, they shall sit erect and salute.

(9) When more than one boat is at the boom, boat keepers shall salute together.

(10) At morning or evening colors, boat keepers stand and face the ship's colors and salute as if on deck. If boat awnings are spread, they will be furled at "first call" before sunset.

(11) The rules regarding salutes extended by boat keepers apply to all men in boats at the boom or riding astern. All men in such boats salute together.

CHAPTER 33

MARLINSPIKE SEAMANSHIP; KNOTS AND SPLICES; VARIETIES OF ROPE; SAILING RIGS AND PARTS OF A SAIL; SAILING

Marlinspike seamanship comprises a knowledge of knotting, splicing, and seizing. It can be learned only by practice. Every sailor should take pride in learning this part of his profession. This chapter will be helpful in learning how to make the most common knots and splices. Frequent practice is necessary before anyone can become expert in making them. The seaman should take every opportunity to practice this art so that he can make these knots and splices accurately and quickly.

The plates which follow show how the following are made:

(a) **Overhand knot.**—Used in making other knots; never used alone.

(b) **Square knot (or reef knot).**—Used for tying reef points; also for bending ropes together when impracticable to use other hitches.

(c) **Figure-of-eight knot.**—Put on end of rope to prevent it from unreeving through a block or eyebolt.

(d) **Bowline.**—A knot that will not slip. Generally used in the end of mooring lines to pass over bollards or cleats.

(e) **Running bowline.**—A bowline made around the standing part.

(f) **Bowline on a bight.**—Used to sling a man over the side.

(g) **Half hitch.**—Used for making fast a line to pile, spar or bollard. Never used alone, if security is desired.

(h) **Two half hitches.**—Used same as half hitch. Two half hitches are much better than one.

(i) **Clove hitch or ratline hitch.**—Ratlines are hitched to shrouds in this way. Used in securing paint pot lines to life lines, etc.

(j) **Timber hitch.**—Used for towing spars.

(k) **Timber hitch and half hitch.**—Used same as timber hitch. The half hitch placed near end of spar assists in steering it.

(l) **Round turn and half hitch.**—Used for bending a line to an anchor.

(m) **Blackwall hitch.**—Used for securing hook to bight of rope quickly.

(n) **Cats paw.**—Used same as Blackwall hitch.

See Figures 57, 58, 59, and 60, pages 158–161.

(o) **Sheep shank.**—Used for shortening bight of rope.

(p) **Marlin hitch.**—Used for lashing hammock.

(q) **Sheet or becket bend.**—Used for bending rope to becket.

(r) **Sheet or becket bend (double).**—Used for bending rope to becket.

(s) **Granny knot,** opposite of reef knot.—Entirely useless and unreliable.

2. The following knots are used for bending two ropes together:

(a) **Square knot.**

(b) **Two bowlines.**

(c) **Single or double Carrick bend.**

(d) **Reeving line bend** (used where line is to be rove through block).

3. The following show how casks, bales, etc., can be hoisted aboard:

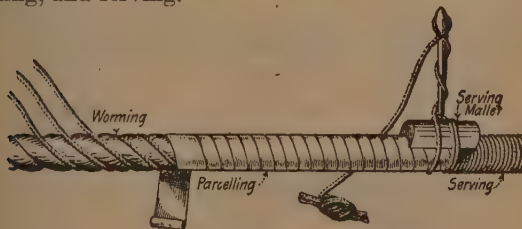
- (a) To sling a cask head up.
- (b) Bale sling; for hoisting bales or boxes.
- (c) Parbuckle; to parbuckle cask or drum.

SHORT AND LONG SPLICES; EYE-SPLICE

Both short and long splices are used for bending two parts of a rope together. The long splice is used where the spliced part is not to be larger in diameter than the rest of the rope. The eye-splice is used for putting an eye in the end of a rope. (See fig. 150.)

WORMING, PARCELING, AND SERVING

Rope which is to be exposed to the weather or to exceptionally hard usage is protected by worming, parceling, and serving.



Worming, Parceling and Serving

FIG. 149

Worming consists in following the "lay" of the rope, between the strands, with small stuff, tarred, which keeps moisture from penetrating to the interior of the rope, and at the same time fills out the round of the

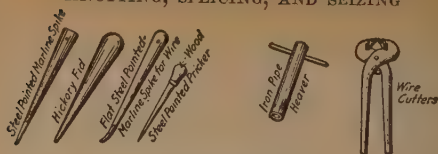


FIG. 1.
TOOLS FOR SPLICING



FIG. 2.
EYE SPLICE (1)



FIG. 3. EYE SPLICE (2)



FIG. 4.
EYE SPLICE (3)



FIG. 5.
SHORT SPLICE (1)



FIG. 6.
SHORT SPLICE (2)



FIG. 7.
SHORT SPLICE (3)



FIG. 8. LONG SPLICE (1)

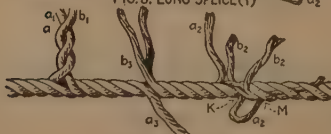


FIG. 9. LONG SPLICE (2)

FIG. 150. -Splices, hemp and manila. (Reproduced by permission from Knight's Seamanship. Courtesy of D. Van Nostrand Co.)

rope, giving a smooth surface for the parceling and serving.

Parceling consists in wrapping the rope spirally with long strips of canvas, following the lay of the rope, and overlapping like the shingles on a roof to shed moisture.

Serving consists in wrapping small stuff snugly over the parceling, each turn being hove taut as possible so that the whole forms a stiff protecting cover for the rope. A "serving-mallet" is used for passing the turns in serving, each turn being hove taut by the leverage of the handle as illustrated:

Worm and parcel with the lay
Turn and serve the other way.

VARIETIES OF ROPE

Three kinds of rope are commonly used on board ship: **Hemp** (tarred and untarred), **manila**, and **wire**. **Coir** is sometimes used for heavy towropes, for which it is particularly well adapted because of its buoyancy; but it is not particularly strong. Ropes are also made of flax and cotton; these, however, are not suitable for use at sea.

Hemp rope is made from the fiber of the hemp plant. The plant is cultivated in many parts of the world, but especially in Italy, Russia, and the United States. Russian and American hemp are very generally used for cordage in the United States.

Manila rope is made from the fiber of the stalk of the wild banana. It comes principally from the Philippines. It is commonly designated as "manila hemp."

Coir is made from the fiber of coconut husks. Because it floats and does not become water-logged, it has a great advantage over hemp, manila, and wire for

some purposes. Unfortunately, however, it has only about one-fourth the strength of manila.

In making rope, the original fibers are twisted together into threads or yarns, which in turn are twisted into strands. A number of strands are laid up into a rope, and sometimes several ropes are combined to form a cable.

There is a tendency for twisted rope to unlay. The successive twists therefore are taken in opposite directions. Yarns are usually right-handed, strands left-handed, ropes right-handed, and cables left-handed. If the above rule is reversed, we get the "left-handed" or "back-handed" rope.

Rope is ordinarily made up of three strands, but sometimes four are used. In the latter case, the strands are laid up around a "heart," which fills the space in the center between the strand. The rope made this way is called four-stranded or "shroud-laid" rope.

Hemp rope is almost invariably tarred. In this form it is used for such of the standing rigging as is not of wire, and for the heaviest of the running rigging. The tar keeps the rope from rotting due to dampness. Tarred hemp is not so strong or flexible as hemp that is not tarred. Hemp when not tarred is known as "white rope," and is the strongest rope used except wire.

Manila is used for most of the running gear, for hawsers, and for the greater part of the miscellaneous work of the ship. It is not as strong as untarred hemp, but does not require tar to keep it from rotting.

The strength of the rope yarn varies from 75 to 100 pounds. For special purposes rope is sometimes plaited instead of laid. This does away with the tendency to kink.

All rope except wire is designated as to size by its circumference, and runs from about three-quarters of an inch to 16 inches, and even more; but the largest sizes are never seen on shipboard, 12 inches being about the maximum that even the largest ship would carry. Its length is measured in fathoms.

SMALL CORDAGE; CARE OF ROPE

Small cordage is usually known on shipboard as "small stuff," and is designated either by the number of threads or yarns that it contains, as "18-thread stuff," "15-thread stuff," etc., or as "ratline stuff," "seizing stuff," "marline," "spun yard," etc. The following are the most common varieties of small stuff used on shipboard.

Spun yarn is made from "low tow" of hemp. It is twisted up loosely, tarred, and rubbed to keep it from unlaying. The treads are twisted right-handed and laid up left-handed. It is known as 2 or 3 yarn stuff, depending on the number of yarns of which it is made. It is used more on shipboard than any other variety of small stuff.

Houseline, roundline, and marline are used for the same purposes as spun yarn. They make neater work, because they are laid up more smoothly and of better material.

Marline is 2-stranded left-handed; houseline, 3-stranded, left-handed; and roundline, 3-stranded, right-handed. All of these are used for seizing; but where a heavier and stronger material is needed a higher grade of stuff is used, laid up by rope-making machinery and finished like the large size of rope, although classed as small stuff. This is called seizing stuff. It is usually 3-stranded, right-handed, and may

have 2, 3, or 4 threads to the strand, making 6-thread, 9-thread, or 12-thread seizing stuff.

Ratline stuff does not differ from seizing stuff, but is larger. It is 3-stranded, right-handed, and may have 4, 5, 6, 7, or 8 threads to the strand, making 12-thread, 15-thread, 18-thread, ratline stuff, and so on.

Rope yarns are used for many purposes on board ship, and a good supply of them is always on hand. They are made from condemned hemp cordage, tarred.

Two yarns twisted together by hand, or single yarns twisted up against their natural lay and rubbed smooth, are called "foxes" and are often used for light seizings, being much neater than spun yarn.

Rope tends to shrink when wet, and unless it is allowed to do so freely may be injuriously strained. For this reason and to prevent danger to the yards, etc., running gear must be slacked in damp weather. On the other hand, advantage may be taken of this tendency by wetting the rope to tauten lashings, etc.

Rope rots rapidly from dampness and it should never be stowed away unless perfectly dry. This caution is especially important in the case of hawsers, which are rarely used without becoming wet. For this reason also hemp and manila block straps should not be covered except when absolutely necessary, because the covering not only holds the moisture but also prevents the rot from being seen.

Rope made of vegetable fiber will weaken by constant working, even though it has never been subjected to anything approaching a breaking stress. If subjected even once to a stress approaching that of breaking, its strength is reduced and it may be expected to give way under a very moderate pull.

When a piece of small stuff or rope is cut the strands tend to unlay. This causes the ends to fray. To prevent this the ends are "whipped." Marline or sail twine is used for whipping, depending on the size of the line. The whipping is practically the same as parceling.

Seizing is binding two parts of a rope together with spun yarn or marline. It is also used to bind two parts of sister hooks together, or to bind the end of a rope to a standing part. Figure 57 shows seizing on a half hitch. If one or two parts of a rope that cross are bound together, the seizing is called a "throat seizing."

Mousing.—This is used across the open end of a hook, to strengthen the hook and to prevent it from becoming unhooked.

A good seaman always puts a whipping on the end of a line and never allows it to fray. This applies to any line or piece of small stuff in his part of the ship. A man is not a good seaman if his hammock lashing is frayed, if the line on his swab handle or paint pot is frayed.

Likewise a good seaman always puts a mousing on a hook which is in use, and always seizes sister hooks. This is especially necessary if this gear is aloft; unless these precautions are taken the blocks or gear may get adrift and injure some one on deck. Of course the best thing to use when securing blocks aloft is a shackle. If this is not possible, seized sister hooks are next best, and then a single hook which has been carefully moused.

WIRE ROPE

Wire rope is made of steel or copper wires laid up like yarns to form strands; these strands in turn are

laid up to form a rope. Flexibility is secured by the use of a large number of small wires laid up around hemp hearts to form strands, which are in turn also laid up around a hemp heart to form a rope. A comparatively sharp twist also adds to the flexibility of the rope. Where flexibility is not important, the strands sometimes have wire hearts. This adds to the strength of the rope, but this type would wear out more quickly than the type with hemp hearts in any use where it is bent or works through a block or chock. Wire rope with wire hearts is sometimes used for shrouds, stays, etc.

The size of wire rope is designated by the diameter.

Wire rope is prevented from rusting by galvanizing the strands. Regardless of this, however, wire rope must be kept well greased and oiled, especially in the seams between the strands to prevent wear and rusting while the rope is in use. It must always be greased before laying it up after use.

Wire is used for most of the standing rigging of modern ships, and for pendants, spans, ridge ropes, and other fittings. It is rarely used on the ship for running gear except in a single pendant, or for tackles connected with steam or electric winches for hoisting boats and for other heavy work.

Wire hawsers are much used in towing, for which work they have many advantages and some serious disadvantages. They are coming more and more into use for general work, such as warping around docks, securing alongside, etc. For all of these purposes great flexibility is required, and great care should be taken to avoid sharp bends, and not to kink the wire. If wire hawsers are supplied for towing, they should never be used to moor the ship to a dock, and never sharply bent.

Wire rope requires in some ways better care than hemp or manila and far better care than it generally receives on shipboard. It should be kept on a reel when not in use. A single kink in the finest wire rope practically ruins it at once. A wire hawser should be gone over thoroughly every month or two with raw linseed oil; or, better, if it is not to be used for some time, with a paint made of equal parts of linseed oil and lampblack. Neither oils nor tars can be regarded as perfect preservers, as they all contain more or less acid, which attacks the steel.

Whenever wire rope is to be worked over a sheave, the diameter of the sheave and the speed of running become very important. The larger the sheave and the lower the speed the better.

A hemp core holds the lubricating material in the heart of the rope, and gives it out under pressure of a heavy strain. This is one of the most important reasons for preferring hemp to wire for the core, although the main reason has to do with flexibility.

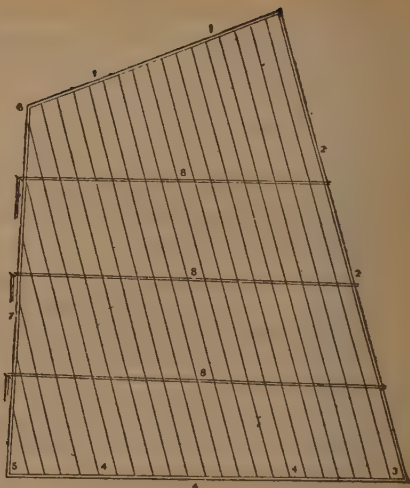
Wire rope is habitually kept on reels. In receiving a line and transferring it from one reel to another care should be taken to unreel it, instead of slipping off the successive bights over the end of the reel, as is sometimes done. The most valuable characteristic of wire rope, as compared with hemp, manila, and chain, is its reliability. Within its proper working limits it almost never fails. An accident with wire rope is almost necessarily due to carelessness. A wire rope should be discarded when the outside wires are reduced to one-half of their original diameter.

SAILS, PARTS OF SAILS

Figures 152 and 153 show two types of rigs, with the names of the parts. The edges of all sails are

SPANKER

1. Head
2. Leech
3. Clew
4. Foot
5. Tack
6. Throat
7. Fore leech
8. Brails

**JIB**

1. Head
2. Tack
3. Clew
4. Fore leech or luff
5. After leech
6. Foot

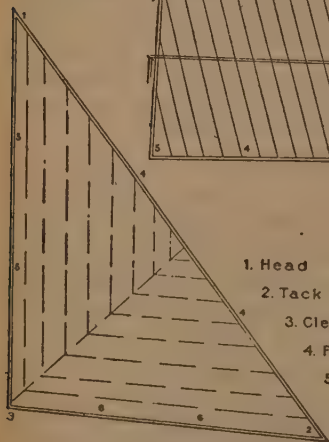
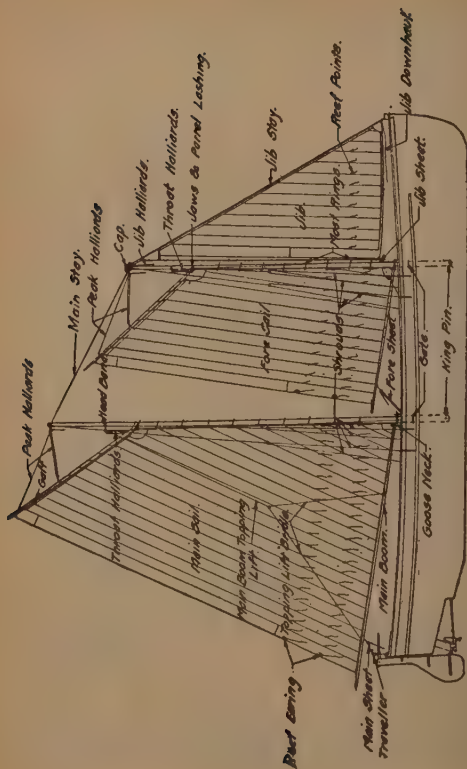


FIG. 151



50-FOOT MOTOR LAUNCH. SCHOONER RIG

FIG. 153

The corners of sails are usually strengthened by sewing on a triangular patch. On four-cornered fore-and-aft sails the corners are called peak, throat or nock, tack, and clew. On three-cornered sails the corners are called head, tack, and clew. The reef band is a strip of canvas sewn to the sail to strengthen it in wake of the reef points. The reef cringle and reef earings permit furling the lower part of the sail in a strong breeze so that only the upper part of the sail is in use. The luff of a gaff sail, sliding gunter sail, or spritsail is either laced to the mast or fastened to wooden mast hoops or metal mast rings which slide up and down on the mast. Likewise the luffs of all except the smallest jibs are fastened to metal hanks which slide upon the stay. On Navy boats with foresails and mainsails the mainsail only is usually fitted with a boom.

A very careful study of Figures 151, 152, and 153 will fix these names in mind.

RIGS OF SAILS FURNISHED TO SHIPS BOATS

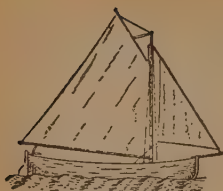
Rigs.—The 50-foot motor launch carries the schooner rig.

The 30-foot, 33-foot, 36-foot, and 40-foot motor launches carry the sloop rig.

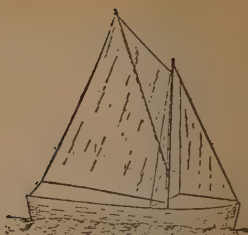
The 24-foot motor launch is fitted with double standing lugging for sailing and is the size usually issued to destroyers.

The 24-foot motor launch, nearly all cutters, and whaleboats carry the double standing lug rig without jib; sliding gunter rigs are not yet replaced in a few whaleboats and cutters.

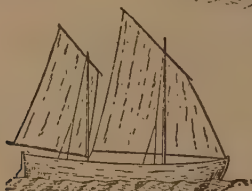
All dinghies carry the sprit rig.



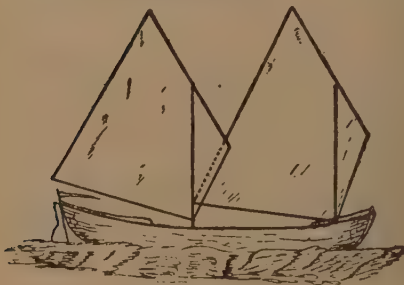
Launch—U. S. Navy.
(Gaff and Boom Rig)



Sprit Rig.



Dipping Lug Foresail and
" Standing Lug Mainsail.



STANDING LUG

FIG. 154.—Rig of boats for sailing

NAUTICAL TERMS (SAILING)

(Read over this paragraph until every word is understood)

The direction of the wind is that from which it blows; thus a north wind blows from the north. To windward is into the wind; to leeward is down the wind; the weather side of a deck is the half of the deck to windward of the center; the lee side is the half of the deck to leeward of the center. Naturally a boat heels away from the wind, so that the lee side is down and the weather side up. When the rudder is amidships the tiller is too; then the coxswain may put his tiller up, or to windward, and have weather tiller, or he may put it down to leeward and have lee tiller. Fore-and-aft sails and lug sails, such as Navy boats use, are ordinarily spread on the lee side. When a boat turns her head into the wind, as if she were going to tack or to come to anchor, she is said to luff.

Frequently a boat sailing with the wind on one side will feel a gust which heels her over and threatens to capsize her. The coxswain may luff by putting his tiller down, and as she turns into the wind the sails spill their wind and begin to flap; in this situation the sails do not heel the boat over any longer, and the danger of capsizing has thus been temporarily averted. When the boat luffs and the sails begin to flap, they cease to draw and the boat loses headway; a good coxswain will not luff enough in a gust to spill his sails completely, but only so that the weather cloths or luff of the sails ceases to draw while the remainder of each sail still holds its wind and keeps the boat forging ahead. Luffing just this much is called touching the sails. Usually the wind does not blow steadily from one direction, but veers about, especially when it blows

in puffs and squalls. If the coxswain has luffed too much in a squall and his sails are flapping, the wind may veer around from one bow to the other and fill all his sails on the wrong side so that they draw toward the stern of the boat. This is a bad situation; the sails are said to be aback; the coxswain can not steer the boat and she will gain sternway and may drift down on something or capsize before she can be got under control again. When the sheets are hauled in and the sails are nearly fore and aft, it is said that they have been **hauled flat aft**. Sometimes in tacking the coxswain may give orders to **set the jib aback**, or **back the foresail**; if he does give these orders, the sails should be set aback but trimmed as flat as possible, as this produces more turning effect, which is wanted in tacking.

A boat can not sail directly to windward; she sails a certain number of compass points from the wind. The design of the boat and her rig determines how close to the direction of the wind a boat can sail. A boat that can not sail closer than 6 compass points from the wind without spilling the wind from her sails is called a "6-point boat." Suppose a north wind is blowing and a 6-point boat wants to reach a point a mile to the northward of the present position. She can not sail north, but can sail ENE., 6 points away from the wind. Therefore if she sails ENE. for about $1\frac{1}{2}$ miles and then comes about and sails WNW. for about the same distance she will have made the distance 1 mile to the northward from where she started. This process is called "beating to windward," and each of the two legs or courses is called a "tack"; when changing from one course to the other the boat must "go about" by either wearing or tacking; while headed east-northeast with the wind on the port bow she is

on the wind or close-hauled on the port tack; and when she has changed course to west-northwest, she is on the wind or close-hauled on the starboard tack. When a boat is not sailing as near into the wind as possible (is not close-hauled), she is sailing free, reaching, or running before the wind. Sometimes in fine weather a two-masted boat runs before the wind with the foresail set on one side and the mainsail on the other, this is called sailing wing-and-wing; on the other hand, in a storm she sometimes scuds before the wind under the jib alone, or under bare poles (masts without sails).

SIMPLE PRINCIPLES OF SAILING

A boat may sail wing-and-wing right before the wind and an oar may be used to spread the foot of the jib, and also the foot of the foresail if it has no boom. Sailing wing-and-wing and using improvised booms should not be attempted in a strong breeze, especially if there is any sea running.

In wearing it is best to sail dead before the wind, haul each sail in, gybe it, and ease it out on the other side, in this order: Jib, foresail, mainsail. In a strong wind the mainsail should be lowered and set again on the other side after wearing.

It is considered that sailing dead to leeward in a strong breeze is more dangerous than in any other direction, because the boat tends to yaw and it is very likely that the mainsail will gybe. This can usually be avoided by shifting the crew aft to trim the boat down by the stern, and steering very carefully.

Usually in sailing free, the foresail and jib are hauled aft flatter than the mainsail. When reaching with the wind nearly abeam the sails are not set at right angles

to the keel, or at right angles to the wind, but somewhere between these positions.

In beating to windward just 1 mile it might be necessary to sail 4 miles; sometimes a Navy boat will do better than that, but that is a fair average. If the tide or current is running down the wind, it is almost impossible to beat against it, and many a happy recreation party has failed to do so and rowed back to the ship an hour after dark only to be told by the officer of the deck that they were all on the report for not returning before sunset.

The shape of the sail when close-hauled is very important; the leech should be almost flat, and some yachts, to accomplish this, sew battens into the canvas, which extend several feet from the leech horizontally toward the luff. A little slack or belly should be allowed in the luff. The cut of the sails, the way they are laced to the yards and booms, and the tightness of throat and peak halyards all affect the shape of the sails when drawing.

When first hauled by the wind (close-hauled), it is necessary to see that the boat is trimmed just right and that each sail is trimmed just right. It will not be possible to write in a few lines just how this is done; in fact, perfection in this line is almost an art; but nevertheless some idea of what is right can be given in a short space. All the sheets are hauled aft and the boat is headed off the wind (sailing free) until good headway is gained. Then she is gradually luffed to touch the sails, and if one lifts appreciably before the others it is hauled aft a little flatter and set so that the jib lifts a little before the foresail and mainsail do, and these two lift about together. The boat is then headed off just a little to gain speed and see what she

will do; if she carries lee tiller, it is very important to correct it by moving weights (the crew) forward. If the lee tiller can not be corrected by getting the crew and other weights reasonably well forward, it should be corrected by hauling in a little on the main sheet and checking a little of the jib sheet. The process so far described will get all the sails trimmed to pull together, and the boat trimmed properly, but all the sails may be too flat or not flat enough. Under good conditions two-masted Navy boats will sail nicely when headed within about six points of the wind, and one-masted boats somewhat better. If the coxswain when about to tack will note some distant object exactly astern, then right after tacking it should be nearly broad on the lee bow; or an object ahead before tacking should be on the weather quarter after tacking. If she will not head as near to the wind as this, it is probable that all the sails should be hauled a little flatter.

If, on the other hand, the sails have all been too flat the boat will sail as near the wind as has been described, but she will go slowly, and instead of going through the water the way she is headed she will seem to go through the water sideways away from the wind. The boat must be tried out thoroughly, with the trim of the sails altered a little each time until the best position of all of them has been learned. When the boat is at her best the sails will be rap-full of wind, speed through the water almost as high as if she were sailing free, and while close-hauled the course will not be quite as close to the wind as the boat could make by sacrificing her speed. Perhaps the peak of the mainsail will flap gently and slowly like the wing of a lazy pelican.

In a strong breeze the sails ought to be reefed; this makes them smaller, so that the wind does not exert so much force against them. Therefore the boat will not be so likely to capsize or the masts and yards to carry away. Often a boat with sails reefed and full of wind all the time will go right on by one with all sails spread which heels way over and buries the bluff of the bow, then has to luff to keep from capsizing. The reefs in Navy boats are well placed, so that if a boat is trimmed well before reefing she will be trimmed well after reefing, and these boats never do better under sail than when close-reefed in a drizzle and a steady blow.

TACKING

In beating to windward, boats ordinarily go about by tacking, because in tacking they turn into the wind and gain ground to windward. In wearing, they turn away from the wind and make quite a distance to leeward; still it is often possible to wear in winds so strong or water so rough that tacking Navy boats is impossible.

Three things may happen after a tack is begun. *First*, the boat may turn into the wind and fill away on the new tack without ever losing headway. *Second*, she may turn into the wind and a little bit more, then lose headway; in this case if the jib is set aback when she heads into the wind it will help her about, and she will fill away on the new tack without going astern. If she has no jib, the foresail may be used for this purpose. *Third*, she may luff nearly into the wind, lose headway, and cease turning. The best that can be done is to set the foresail and jib aback—the boat will gain sternway, and when she does the rudder should be reversed. She will then back around on the new tack.

Our boats are capable of doing better than this, but being in the predicament it is better to back around and to get out an oar to help the boat around than to make a lubberly failure and drift down on a lee shore or a lower boom.

NOTE.—A boat in a sailing race is not permitted to use an oar.

Rudder.—When about to tack, the coxswain should head off the wind a little to fill the sails and gain good headway, and he should watch for smooth water and avoid luffing into a breaking wave. The rudder should not be suddenly put hard over, but it should be put over enough to have good effect at first and then more and more as the boat swings; by the time the boat is swinging rapidly the rudder should be over about 30° and it should be kept there. If the boat gains sternway, as in the third case above mentioned, the rudder should be reversed when sternway is gained.

Mainsail.—The mainsail, as long as it is filled, drives the boat ahead and helps to maintain steerageway. When it begins to lift, the boom may be pulled more nearly amidships and the sail will tend to push the stern of the boat away from the wind. The boom should not be hauled in any more than enough to keep the sail filled, and when it is amidships the sail should be allowed to flap. The mainsail should never be set aback.

Foresail.—This sail should not be disturbed until it completely loses the wind and begins to flap. Then the sheet should be slacked away and the sail handled to interfere as little as possible with the continued headway of the boat. This means it should be trimmed exactly into the wind and kept flat. *When* the boat has *lost headway*, she *must* be turned with the headsails (foresail and jib). If she is nearly

about, as in the second case described above, only the jib need be set aback. But if there is no jib, or if she has not turned very far before losing headway, as in the third case, the foresail also must be set aback.

Jib.—As long as the jib draws it should not be disturbed; when it has completely lost the wind it should be trimmed into the wind and kept flat so that it will interfere as little as possible with the continued headway of the boat. When the boat has lost headway the jib should be promptly set aback and kept aback until it will draw on the new tack.

List of boat.—The sails will draw better on the wind if the boat is listed to leeward a little. In tacking, care should be taken not to get too many men on the weather side, thereby causing the boat to list to windward, as this will cause the sails to set badly and spill the wind too soon. Tacking should be accomplished with as little moving about in the boat as possible.

Trim of the sails when aback.—When the head sails are set aback to turn the boat in tacking they should be hauled as flat aft as practicable, and the clews of the sails should be pushed out to windward only far enough to fill them back; in this manner the greatest turning effect is obtained.

CHAPTER 34

DUTIES OF A LOOKOUT; ENGINE-ROOM TELEGRAPH; BREAKDOWN AND MAN OVERBOARD SIGNALS; SPEED CONE, FOG WHISTLE, TOWING SPAR; MESSENGER AND ORDERLY DUTY; SIDE BOYS, SWEEPERS, SIDE CLEANERS, JACK - O' - THE - DUST; ANCHOR WATCH

DUTIES OF LOOKOUT, MASTHEAD AND DECK

(a) The masthead lookout is stationed in the foretop. This lookout is maintained from sunrise to sunset at sea. Lookouts are relieved every two hours, and they are required to be on the alert at all times during their watch. Lookouts must report vessels, land, rocks, shoals, discolored water, buoys, beacons, lighthouses, floating objects, or anything else of interest to the officer of the deck. This report is made over a voice tube direct to the bridge, or, in small ships, direct to the officer of the deck. The procedure in making these reports is as follows: The lookout makes such reports as "Sail ho," "Land ho," "Lighthouse ho," "Buoy ho," etc. The officer of the deck acknowledges this report by asking "Where away?" The lookout then gives the relative bearing of the object as "Two points on the port bow." The officer of the deck may then ask for further information on the object sighted, and the lookout will describe it as briefly and clearly as possible.

The general orders for lookouts are as follows, and all men must know them thoroughly:

1. Be alert and attentive.
 2. Do not give your attention to anything but your own special duty.
 3. Remain at your station until you are regularly relieved. At sunset you can expect orders from the officer of the deck or boatswain's mate of the watch, "Lay down from aloft."
 4. Keep on your feet and do not lounge.
 5. Do not talk with others except as required by your duty.
 6. When making a report, speak out loudly and distinctly.
 7. Repeat a hail or a report until it is acknowledged by the officer of the deck.
 8. When you are stationed be sure that you understand what you are supposed to do. If you do not understand your duty, ask the petty officer who stations you.
 9. Remember that, no matter what your station, your duties are important and most necessary. According to the manner in which you perform your duty you may make yourself of great assistance or absolutely worthless to the officer of the deck.
- (b) The masthead lookouts are relieved at sunset by the bridge lookouts, one on each side of the bridge. Their duties are the same as the masthead lookouts, except that they keep watch on only their respective sides. They also watch the running lights and report immediately if they burn dimly or go out. Whenever the ship's bell strikes they observe that their lights are burning and then pass the hail. "Starboard bridge, bright light," followed by "Port bridge, bright light." The starboard bridge lookout, unless another man is de-

tailed for this duty, is detailed to report the masthead light. In this case he reports, "**Masthead, bright light,**" in addition to his other report. A dim light will be seen quicker at night by looking at the sky a little above the horizon than by looking directly at the horizon. The lookout should sweep the horizon, then sweep the sky just above the horizon. A lookout at night must stand in the dark, and must not have any light shine directly in his eyes.

(c) The life buoy lookouts keep station at their respective life buoys and drop them on order from the officer of the deck, or, in the absence of orders, drop them as near as possible to the man who is overboard. If the lookout sees a man fall overboard or a man in the water, on his side, he should let go the buoy, and repeatedly call "**Man overboard.**" As soon as the buoy is let go, lookouts should endeavor to keep the man in sight.

(d) Special lookouts are often prescribed in case of fog or thick weather, with stations and duties as follows:

1. **Starboard bow.**—Watch fog buoy of ship ahead, and lookout starboard bow.

2. **Port bow.**—Watch fog buoy of ship ahead, and lookout port bow.

3. **Starboard bridge lookout,** from ahead to abeam.

4. **Port bridge lookout,** from ahead to abeam.

5. **Starboard quarter and astern,** to watch ship's own fog buoy, and keep lookout aft.

6. **Port quarter and astern,** to watch a ship's own fog buoy, and keep lookout aft.

7. **Foretop lookout,** duties same as masthead lookout and also as specially ordered.

This lookout is to report immediately if any land, vessel, buoy, or anything else is sighted; or if any bell,

whistle, gun, or other sound is heard. Reports will be made by voice tube or telephone to the bridge, or by singing out, when urgent. The lookout in the bow is an especially important station.

Often in a heavy fog the lookout on the forecastle can see much farther than anyone on the bridge; his station in the bow is away from the whistle and the noises on the bridge. No unnecessary noise should be permitted near him. He must listen for all he is worth and report the *first sound* he hears, for if he waits to hear a faint whistle grow louder the second time the ship will often be in serious danger when he again hears it.

(e) In time of war *special submarine lookouts* are stationed in the top and secondary battery control stations. Sixteen men are on watch at one time, the first one looking only in the direction from dead ahead to two points on the starboard bow; second one, from two points on starboard bow to broad on the starboard bow; third one, from broad on the starboard bow to two points forward of the starboard beam, and so on all the way round the ship. The direction which one lookout has to cover is called his arc; the second man above described has arc 2. In reporting an object this lookout would merely say what he sees and what number arc it is in, thus "Wake of periscope, arc 2." This system of lookout is subject to change by the commander in chief.

ENGINE-ROOM TELEGRAPH

On each side of the conning platform is an instrument called an engine-room telegraph; its purpose is to communicate to the engine room the orders of the

officer of the deck in regard to speed. The telegraph is circular in shape, and the various sectors are marked "Full speed," "Standard speed," "two-thirds speed," "one-third speed," ahead; "Stop," "one-third speed," "two-thirds speed," and "full speed," astern. A lever, fitted with an indicator, travels over the circumference of the circular face of the instrument. If you are stationed at the engine-room telegraph, your duty is to move this lever to indicate the speed designated by the officer of the deck and see that the answering pointer on the instrument moves to indicate the same speed; this shows that the engine room has received and understood the signal. If the signal is not answered instantly from the engine room, move the lever again, bearing in mind the fact that you must use a little muscle in order to operate the lever properly; if the engine room still fails to answer, report immediately to the officer of the deck. It is most important that every signal for a change of speed go to the engine room the instant it is ordered. If you are detailed for a watch at the engine-room telegraph, don't be afraid to ask questions; be sure that you understand your duties, for the safety of the ship may depend upon the promptness and accuracy with which you execute orders. Never lean against the telegraphs; and never touch them without orders from the officer of the deck. When an order for an engine is received, always repeat it aloud so that the officer of the deck is sure you have it right and, at the same time, give the signal on the telegraph. As soon as the engine room has answered this signal report immediately. As an example, the officer of the deck orders, starboard engine, ahead two-thirds speed. Place telegraph on two-thirds ahead and repeat, "Starboard engine, ahead, two-thirds speed."

When engine room answers to two-thirds ahead, report, "Starboard engine answered ahead two-thirds speed, sir."

In ringing up changes of speed do not yank the handle. Sudden pulls may break the chains and disable the telegraph. In case of a casualty at the engine room, they may move the telegraph there to indicate that they must slow down. If this happens report the change to the officer of the deck at once.

BREAKDOWN AND MAN OVERBOARD SIGNALS

The breakdown flag, the numeral 5 flag, is kept rounded up at the foremast of a ship in formation, ready to break in case of accident to machinery or steering gear. Also, in case of man overboard, the flag is broken and lowered part way, but not below the level of the smokestacks. During daylight, a man is stationed at the halliards of this flag, ready to break it when ordered to do so by the officer of the deck. He must also keep watch to see that the flag does not blow out of its own accord. If this flag breaks accidentally the annulling flag should be hoisted before it is hauled down; if it is broken intentionally, look sharp and mind the speed cones. At night, two red lights arranged vertically are turned on for breakdown. These lights flashed and the firing of a gun means man overboard.

SPEED CONES

A speed cone is a canvas cone painted red or yellow; its purpose is to indicate to the various vessels of the fleet in formation the actual speed that a ship's engines are making. The cones are hoisted at the fore yard-arms of vessels in formation. The different positions of the speed cone indicate as follows (see fig. 155):

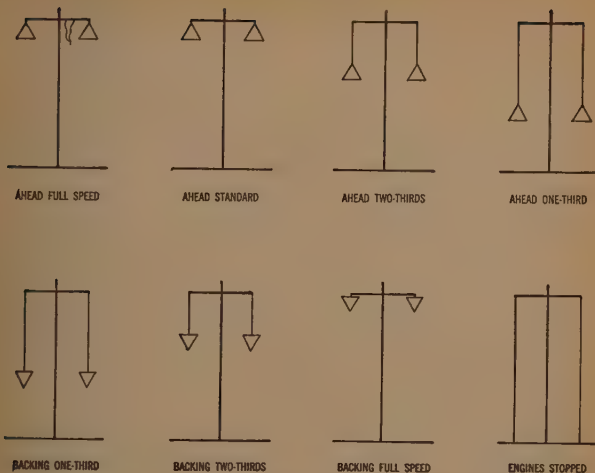


FIG. 155.—Speed cones

POINT UP

1. All the way up to the yardarm: Going ahead at standard speed.

2. About two-thirds up to yardarm: Going ahead at two-thirds standard speed. (Cone should show well clear above bridge.)

3. About one-third up to yardarm: Going ahead at one-third standard speed.

POINT DOWN

1. Hoisted about one-third up to yardarm: Engines backing one-third.

2. Hoisted about two-thirds up to yardarm: **Engines backing two-thirds.**

3. All the way up to yardarm: **Engines backing full speed.**

The cone lowered out of sight: **Engines stopped.**

In case speed cones are used on both yardarms, the two men should lower and hoist their speed cones together.

If you are detailed for a watch at the speed cone, you must remember the following points:

Upon your accurate and prompt execution of your orders in regard to the speed cones depends, in great measure, the accurate position of the ships astern of yours in formation; therefore your duties are most important, and you must handle the cone smartly and not in a careless or perfunctory manner. If you are slow or careless in the performance of your duty, you may be directly responsible for a collision.

The speed pennant (red pennant) when broken at the yardarm next to the speed cone, point up, signifies that the ship is going full speed, which is one-eighth faster than standard speed.

NIGHT-SPEED INDICATORS

The night-speed indicator consists of a double electric lamp at the main truck, showing red or white. The meanings are as follows:

WHITE LIGHT

Steady light: **Going ahead at standard speed.**

Single flashes: **Going ahead at one-third standard speed.**

Double flashes: **Going ahead at two-thirds standard speed.**

RED LIGHT

Steady light: **Stopped.** (In emergency, toots for 10 seconds with steam whistle also.)

Single flashes: **Engines backing.** (In emergency, three blasts with steam whistle also.)

Double flashes: **Engines backing at full speed.** (In emergency three blasts with steam whistle also.)

The controller for the speed light is located on the conning platform. By leaning against the controller, it is possible to switch a light on or off without orders. You would thereby become responsible for throwing the ships astern of you out of proper station, even if you did not cause an actual collision. Therefore, never lean against the truck light controller; keep on your feet and be alert. Never touch the controller without a direct order from the **Officer of the deck.**

The speed-light controllers contain an automatic apparatus for flashing the lights, so that it is only necessary to put the handle at the place marked "**Standard,**" "**Ahead, Two-thirds,**" "**Stop,**" "**Back,**" etc.; in order to show the proper light or flashes at the truck. On all controllers there is a button for flashing the light by hand. Likewise all of them have a change switch which sends the current to a screened speed light instead of a truck light. The screened speed light is a white light which can shine only through a tube directly astern. It is mounted on the mast or another suitable place aft, and being white, one can not make a stop or backing signal with it.

In time of war, or in a war game, a ship will put out all other lights and run with only the screened speed light, or perhaps some substitute for that.

FLAG SPEED INDICATORS

Except when entering or leaving port or during special circumstances, to be determined by the commander in chief, speed cones are not used by battleships in formation.

During daylight the speed of ships is indicated by the use of flag speed indicators as prescribed below. They are displayed continually from daylight until dark on little flagpoles on the ends of the bridge. They consist of boat flags indicating the engine speed to the nearest knot as specified in the following table.

Whenever practicable, the speed flag is changed before the engine speed is changed.

Flag speed indicator table

d-4 knots.	l-12 knots.	t-20 knots.
e-5 knots.	m-13 knots.	u-21 knots.
f-6 knots.	n-14 knots.	v-22 knots.
g-7 knots.	o-15 knots.	w-23 knots.
h-8 knots.	p-16 knots.	x-24 knots.
i-9 knots.	q-17 knots.	y-engine backing.
j-10 knots.	r-18 knots.	z-engine stopped.
k-11 knots.	s-19 knots.	

FOG WHISTLE AND FOG BELL

In fog, mist, falling snow, or heavy rainstorms, whether by day or night, a steam vessel having way upon her is required to sound, at intervals of not more than 2 minutes, a prolonged blast (4 to 6 seconds' duration) on the fog whistle. A steam vessel under way, but stopped, and having no way upon her, is required to sound, at intervals of not more than 2 minutes, two prolonged blasts, with an interval of about 1 second between.

If you are detailed for the fog whistle, report on the bridge immediately and carry out any instructions that may be given you. Remember that if you are not strictly attentive to duty you may be directly responsible for a collision.

At anchor, the ship's bell is rung rapidly for about 5 seconds at intervals of not more than 1 minute. A man is detailed for this watch at the fog bell; his duties are explained to him, and he must carry them out carefully and conscientiously. If other men-of-war are present or expected, it is customary to strike the ship's call letter each time the bell is rung.

FOG BUOY OR TOWING SPAR

The fog buoy was formerly called the position buoy and towing spar. When cruising in formation in a fog this type of buoy may be used by each ship. Unless orders are given to the contrary, it is towed at a distance of 490 yards astern of a vessel's bow. This is the prescribed distance when ships are steaming in formation at 500 yards distance. The line is usually marked by a colored rag, which serves to indicate when a sufficient length of line has been paid out. When this rag comes to the taffrail the towing spar should be in proper position astern. As a rule, a petty officer and two men handle the spar and line. A point to remember is that in case a vessel backs the line must be reeled in promptly, without waiting for orders, or the line is liable to be cut. A searchlight may be kept turned on the spar by day or night to assist the next ship astern in formation to see the buoy. Lookouts are posted, as mentioned before, to keep watch on the towing spar of their own vessel and that of the ship next ahead.

THE DUTIES OF THE VARIOUS MESSENGERS

A seaman, second class, is usually detailed as messenger. He carries messages for the officer of the deck. He must familiarize himself with the correct names of the various parts of the ship and with the names and duties of various officers and petty officers, so that he may be able to carry messages intelligently; he must also know thoroughly the customs of the service, as he will often be thrown on his own resources. In carrying a message he should always move on the run. If called upon to strike bells he should strike them quickly and sharply, man-of-war style. In carrying messages he should know, before leaving, exactly what it is intended that he should say, and he should deliver the message in the exact words received from the officer of the deck. When the officer of the deck leaves the quarter-deck the messenger should follow him at a short distance in order to be ready if needed. Under way, the messenger's station is on the conning platform; in port, the quarter-deck, where in addition to his regular duties he can be of great assistance in performing small jobs—tending boat lines, for example. As a rule, he is charged with scrubbing the port gangways during the morning watch. The messenger should be in exact uniform at all times and pay particular attention to the neatness of his personal appearance. He must remember that he may be of very valuable assistance to the officer of the deck if he carries out his orders quickly and intelligently. Messengers are very often detailed for the service of the various heads of departments; their duties are of the same general nature as the duties of the officer of the

deck's messenger. All messengers will obey the following general rules:

1. Be in uniform of the day from 8 a. m. until 9 p. m.
2. Be attentive to calls.
3. Carry messages on the run; return at once to the sender and report that the message has been delivered.
4. If unable to deliver a message, report the fact to the sender at once.
5. A messenger sent to an officer's room will knock or speak the officer's name until answered, but will not enter the room nor open the door or curtain until told to do so.
6. Obtain permission before going to meals or to the head.

THE GENERAL DUTIES OF A SENTRY

Men detailed as sentries in the Navy perform duty as follows:

1. My general orders are (*a* to *k*, inclusive, must be memorized):

(*a*) To take charge of this post and all Government property in view.

(*b*) To walk my post in a military manner, keeping constantly alert, observing everything that takes place within sight or hearing.

(*c*) To report every breach of orders or regulations that I am instructed to enforce.

(*d*) To quit my post only when regularly relieved.

(*e*) To receive, obey, and transmit orders from the commanding officer, executive officer, the officer of the deck, or the officer or petty officer of the guard.

(*f*) To hold conversation with no one, except in the proper discharge of my duties.

(g) In case of fire, give the alarm, quitting my post if necessary to do so.

(h) To allow no one to commit a nuisance in the vicinity of my post.

(i) In any case not covered by instructions, to call the petty officer of the guard.

(j) To salute all officers.

(k) At night to exercise the greatest vigilance.

2. When calling for any purpose, challenging, or in communication with any person take the position of port arms.

3. A sentry on post will not quit his arms except on an explicit order from some officer or petty officer, from whom he lawfully receives orders; under no circumstances will he yield his arms to any other person.

4. Report at once to the petty officer of the guard every unusual or suspicious event noticed.

5. Between 8 a. m. and sunset the sentries at the gangway shall salute all officers in uniform when going or coming over the side. All sentries on the upper decks or in view from outside shall salute all commissioned officers passing them close aboard, in boats or otherwise.

6. Sentries carrying rifles salute all commissioned officers by coming to present; they salute warrant officers with the rifle salute. Sentries without rifles render the hand salute to all officers.

7. When relieved, a sentry will repeat in detail to his successor all special orders relating to his post.

8. The various posts require certain special orders. Before relieving, a sentry must make sure that he understands the special orders of his particular post; such special orders are usually posted in the vicinity of

the post. Sentries may be detailed for the following posts: The gangways, life buoys, brig, ammunition passage, forecastle, and elsewhere that their services are required.

THE GENERAL DUTIES OF AN ORDERLY

The following rules are given as typical instructions for the captain's orderly; instructions for other orderlies differ only in minor details.

1. Remain at all times in the vicinity of the cabin door, unless sent away on a message by the commanding officer.

2. Accompany the commanding officer whenever he leaves the cabin, unless otherwise directed by him.

3. Never start on a message without a thorough understanding of what is desired. The same applies in delivering a message to the commanding officer.

4. Allow no one to enter the cabin door without authority, except the executive officer and navigator. This order may be modified by the commanding officer.

5. All messages from the bridge or the radio room must be delivered to the commanding officer without delay, regardless of the hour, unless he has given orders to the contrary.

6. Carry out general orders for sentinels on post.

7. Allow no one except the gunner to take the keys to the magazine from the cabin without special authority from the commanding officer. Report to your relief how many magazine keys are out, and, at 8 p. m., report to the commanding officer whether or not all the magazine keys are in their places.

8. Turn the order book over to your relief in the presence of the petty officer of the guard.

9. When visitors are allowed on board, do not allow them to loiter in the vicinity of the cabin. Give necessary instructions courteously, but firmly.

It must be noted that these orders are merely typical ones; they may vary somewhat on different ships.

SIDE BOYS

Seamen, second class, are detailed, as a rule, as side boys. One pipe of the boatswain's whistle means 2 side boys; two pipes, 4; three pipes, 6; and four pipes, 8. The number of side boys ordered to tend the side varies with the rank of the officer coming on board or leaving the ship. On hearing the pipe, the side boys come to the gangway on the run and are stationed by the boatswain's mate. When an officer leaves the ship or comes on board they salute with the right hand, remaining at the salute while the side is being piped. They do not leave their stations until the boatswain's mate gives them the order to leave.

SWEEPERS

Sweepers are detailed for certain periods by the division petty officers, under the supervision of the division officer. They are assigned definite parts of the ship and are responsible that this part of the ship is swept down properly when sweepers are piped. The sweepers should sweep every part of the deck, particularly all corners. Men must always make way for sweepers. The sweepings must never be swept into a scupper, but always into a dustpan and then thrown into the slop chute. The decks must always be swept to leeward.

SIDE CLEANERS

Certain men from each division are detailed as side cleaners; and upon their proper attention to duty depends, in great measure, the neat and trim appearance of the ship. The following instructions, in general, regulate the duties of side cleaners:

1. When they come in from over the side at "mess gear" they must bring up all stages, pots, buckets, and lines, and will then shift into uniform of the day.
2. They must attend all drills and inspections of their divisions, unless they are specially excused by the executive officer.
3. No private gear is to be kept in side cleaners' lockers except clothing for use over the side.
4. While over the side men wear working dress, preferably white; uniform must be whole and at least fairly clean. No mixed uniforms will be allowed; uniform must not be torn or mutilated. Side cleaners will not be allowed to wear jumpers with the sleeves cut out.
5. After coming in from over the side, shift into the uniform of the day immediately.
6. No stage, line, or paint pot is to be left hanging over the side when not actually in use, even for only a few minutes.
7. Punts must be hoisted in when they are not in use; regular side cleaners keep them clean.
8. Entering port, the side cleaners are usually excused from work in their part of the ship one hour before anchoring in order to allow them time to shift into working rig, get stages ready, and stand by to go over the side as soon as the anchor is let go.
9. Men over the side should have bowlines on them; neglect of this precaution is one of the worst sources

of accidental death in the Navy. Good swimmers falling from a stage may be hurt or stunned before reaching the water; in exposed anchorages or under-way waves may carry away the stage itself, or wash a man off it. But the worst situation is in dry dock, where many men have been killed or made lame for life.

10. These instructions are merely typical; they are subject to any change or addition that may be made on any ship.

JACK-O'-THE-DUST

The jack-o'-the-dust is an assistant to the commissary steward and assists in the issuing of stores and cleaning of storerooms.

ANCHOR WATCH

The anchor watch is a detail of men, usually eight, who stand watches from 9 at night until turn-to in the morning. As a rule, each man has an hour's watch, except in an emergency, when the whole watch may be turned out. The watch is divided into two equal parts, with a petty officer in charge of each part. The first part stands watch from 9 p. m. to 1 a. m. and the second part from 1 a. m. until turn-to.

The men are detailed for any work that may be necessary during the night. They would man a boat, cover skylights, slack off the rigging, veer chain, or do any other work they might be directed to do. The officer of the deck usually keeps one of the watch on his feet for messenger duty, and permits the other members of the watch to turn in, provided they use the billets regularly assigned to the anchor watch and hold themselves in readiness to obey a call promptly. It is a very serious offense for a member of the anchor watch to sleep off his regularly assigned billet; it causes

confusion in calling the anchor watch, and it is evident that the watch would never be assembled in time to meet an emergency if they were sleeping in different parts of the ship. The members of the watch relieve each other about every hour, but because they are allowed to turn in they are in no sense relieved from the responsibility of obeying a call the instant they are aroused.

The petty officer in charge of each part of the ship notifies the man in that part of his detail to the anchor watch, but his failure to do so does not excuse the man's absence from the muster of the anchor watch. This duty is assigned to the men of a section in rotation; consequently the man should have a good idea of about when his next tour of duty comes around; and, in any event, the anchor watch list is always posted on the bulletin board early in the day. Before going on liberty the men should make it a rule to consult this list; in fact, the only safe rule is to make a practice of looking at this list every day. At 8 p. m. the word is passed throughout the ship, "Lay aft the anchor watch to muster." If the man fails to be present at muster he will probably find himself detailed to stand two watches instead of one; likewise, if he is late he will be disciplined. Failure to hear the word is no excuse.

At 8 p. m. muster each man finds out who his relief is, and where he swings. When all are present, have received any necessary instructions, and when each man has learned who his relief is, the officer of the deck allows the watch to fall out and stand by for the call, at 9 p. m., "to lay aft the first anchor watch." On hearing this word—or in any event at 9 p. m.—the first anchor watch lays aft and reports to the officer of the deck. If the anchor watch wishes to leave the quarter-

deck at any time he must always obtain the necessary permission from the officer of the deck; likewise, he must obtain such permission before calling his relief. Under no circumstances shall the anchor watch turn in until he and his relief have reported to the officer of the deck.

From 9 p. m. until turn-to in the morning the anchor watch will stand by for a call to man the lifeboat. When the anchor watch is mustered, the coxswain, or petty officer in charge, will assign each man his station in the lifeboat, and report to the officer of the deck that the crew has been detailed and that the lifeboat is ready for use. Owing to its handiness and the number of men available as a crew, a dinghy is well suited for use as a lifeboat in port in good weather, and under such conditions it may be designated as the lifeboat for port service.

THE WATCH AT SEA

The watch is usually stood by the sections of the various divisions; each section takes a 4-hour watch in rotation. During the night watches there is, as a rule, very little to do; consequently men not at work and not on lookout are usually permitted to lie down on deck, in a group where they can easily be found. It is a very serious offense for one of the section on watch to go below for any purpose without permission from the petty officer in charge of the section. Permission for men on the section on watch to lie down on the main deck is not a right, but a privilege; and if for any reason difficulty is experienced in getting men up promptly they are kept on their feet. Never forget that on a night watch you are just as much on duty as you are during any other watch, and that you are simply permitted to lie down and sleep when there is

nothing for your section of the watch to do. When you are permitted to lie down on the main deck while your section is on watch, and when you are on deck at any other time, remember the regulations to keep off the engine room, fireroom, and dynamo room hatches.

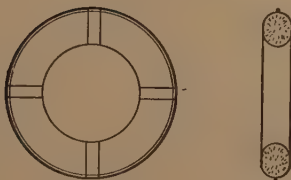
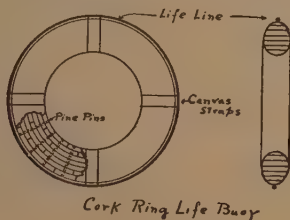


FIG. 156.—Ring life buoys

LIFE BUOYS

Figure 156 shows the construction of both the cork and kapok life buoys used in the Navy. Figure 157 shows the stowage of the Franklin life buoy. This buoy is released by pulling the **hand pull**, or by operating an electric switch. When released, the torch rods remain behind, releasing the stopper over the torch and allow-

ing the water to get to the calcium phosphide inside the torch case. The action of water on this calcium phosphide causes a flame to appear at the top of the

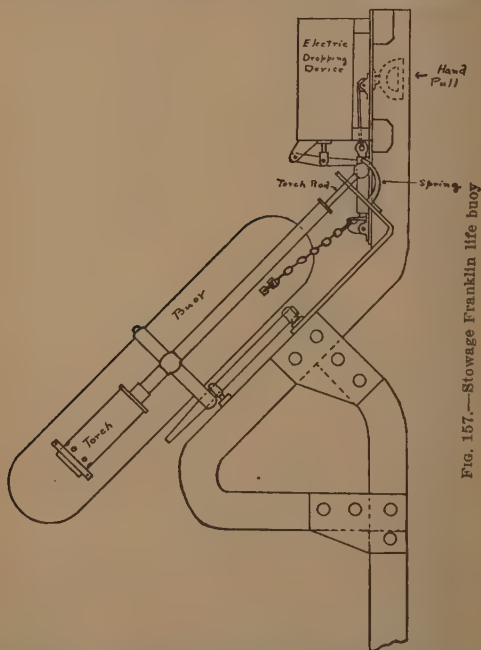


FIG. 157.—Stowage Franklin life buoy

torch tube. The torch takes a vertical position in the water so that the top of the torch tube is always above water and the flame from it can be plainly seen.

CHAPTER 35.

DECK SEAMANSHIP: HEAVING A LINE; CLAPPING A JIGGER ON A ROPE; SEA TERMS; BOAT LINES; SPREADING AWN- INGS; BLOCKS AND THEIR USES

DECK SEAMANSHIP

Hoisting and lowering boats.—When hooking on the boat falls, first overhaul the falls so as to have plenty of slack. Then clear the falls and hook on, the forward hook always being hooked from forward aft and the after hook from aft forward. Always hook on forward falls first. Get all turns out of the falls before a strain is put on and tend them carefully thereafter. It is extremely dangerous to take the turns out after the weight of the boat is on the falls. The strain put on the hook under these conditions is often severe enough to cause the hook to sheer off and the boat to drop. When turns develop in the falls, the boat should be lowered and the turns taken out.

When the boat is up two blocks, the men tending the falls either pass the stoppers, or, if the boat is light, get out on the davit heads to "four-hand the falls." The stopper is made fast to the davit head and is used to hold the boat "two blocks" while the falls are being belayed. It is passed by leading the end through the eye in the lower block, or through the ring in the boat, thence over the davit head and secured with several turns around its own part under the davit head. The

end is held in the hand until the falls are belayed, then the stopper is taken off.

There is still another way of passing the stopper. One end is permanently made fast near the foot of the davit. The stopper is next led up the davit. A hitch is then made around the davit between the sheave and the cleat. From here the end of the stopper is passed around the boat fall and secured by a stopper hitch.

In four-handing, two men straddle each davit and grasp the falls about 10 inches from the block. They then slide down the davits far enough so that their arms will be straight. In this position they can hold the greatest weight. Men should never get their hands closer to the blocks as a slight give may cause their hands to be caught in the block and severely injured. If the boat is quite heavy, two men should be on each davit, the second man being as close up to the first as possible.

In hoisting, the two falls have the slack taken in and are then held together in the hands. The boatswain's mate then orders: **Set taut, hoist away.** The men should take the boat up smartly, keeping step with each other in order to pull together. The boatswain's mate should be the only one to talk or give orders. The men as they reach the end of the deck should break off, fleet back, and again man the falls until the boat is two blocks. When the boat is two blocks and the stopper has been passed or the falls four-handed, the boatswain's mate orders: **Up behind,** when all men on the falls let go at once. The men nearest the davit should overhaul the falls to give the men at the davit enough slack to belay the falls.

The falls are belayed by taking two full turns around the cleat from outboard to inboard, and then securing. (See fig. 158.)

In lowering, the falls are taken off the cleat until the last two turns remain. There will actually be one and one-half turns left on the cleat as the boat is lowered. Men should watch their falls carefully while lowering to prevent them from jumping the cleat and

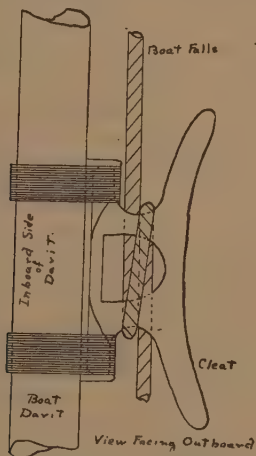


FIG. 158.—Correct method to belay boat fall. Falls ready for lowering

dropping the boat. The boatswain's mate in charge of the lowering will direct the men at each fall so that the boat will go down on an even keel.

In using blocks, pay particular attention to the line which is rove through the block. The line must be clear running and should have no knots or kinks to

prevent easy passage of the line. All blocks should have straight leads. These blocks must be straightened before the weight is lifted. Before hooking on a block have all the slack taken out of the falls and see that the line in the block is not jammed between the sheave and the cheek of the block, but passes directly over the sheave. If it is necessary to run a line around a corner where the line is liable to chafe, use a snatch block or any kind of a block that will save the cutting of the line.

Blocks and overhauling of blocks.—Blocks ordinarily consist of four parts, the frame or outside; the sheave or wheel over which the rope passes; the pin or axle on which the sheave turns; and the strap inclosing the frame by which the block is secured. Blocks whose frame is composed of several pieces riveted or bolted together are called **made** blocks, while those having the frame in one piece are called **mortised** blocks. The hole in the sheave for the pin is usually lined with composition to decrease the friction, but some patent blocks have the sheave fitted with roller bearings. The sides of the frame are called the **cheeks** of the block. The holes through which the rope reeves are called the **swallows**. The grooves cut on the sides and one end of the cheeks to allow the strap to fit in are called the **scores**. The straps are made either of rope or iron and are fitted with either thimble and hook for hooking in the block or with a becket to which the standing part of the fall can be made fast. Blocks are classed according to the number of sheaves they contain, as single, double, fourfold, etc. Blocks are measured by the length of the frame, a 10-inch block having a frame 10 inches long. Blocks are furnished in all sizes from 4 inches to 24 inches.

The types of blocks usually found in the Navy are shown in Figure 159. Blocks are named according to the uses and places they are put and also from their peculiarity of construction. Snatch blocks are single blocks which are used to hook on to bolts in the deck to make a good lead for the boat falls, etc. The block is constructed so that the frame and strap are hinged, allowing the fall to be snatched on the bight. For hoisting cargo or a heavy weight a gin block is used. This block is a single block with a large diameter iron pulley and an iron frame.

Blocks must be overhauled at regular intervals to keep them in good working condition, as they are exposed to salt air which causes rust and tends to "freeze" them in a short time. To disassemble blocks, the pin and sheaves are removed and all grease and rust carefully removed. Care must be taken not to use emery any more than actually necessary to remove rust as this wears away the pin. Before assembling, the pin should be carefully greased with heavy grease or with a mixture of tallow and white lead.

Coiling down rope; flemish down rope; faking down falls.—Right-handed rope is always coiled down from left to right, clockwise. Left-handed rope is coiled down from right to left. In coiling down boat falls, first take the end of the falls and lead it out to full length on the deck. Begin coiling it down from the bight near the davit, shaking out all kinks or turns toward the end. Then capsize the coil if it is to be left down clear for running. To flemish down a fall, first coil it down as above, then, beginning with the end of the falls in the center of the coil, wind a flat coil, right-handed for right-handed rope and left-

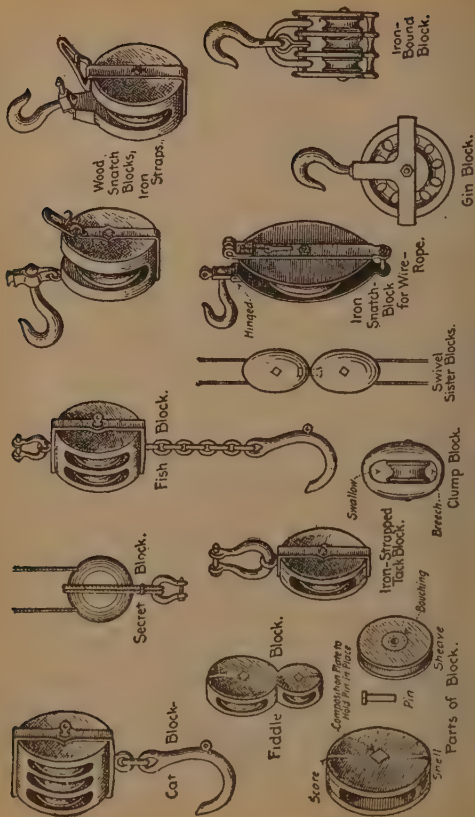


Fig. 159.—Blocks

[Reproduced from Knight's "Modern Seamanship," by permission. Courtesy of D. Van Nostrand Co.]



FIG. 160.—Coiling down rope

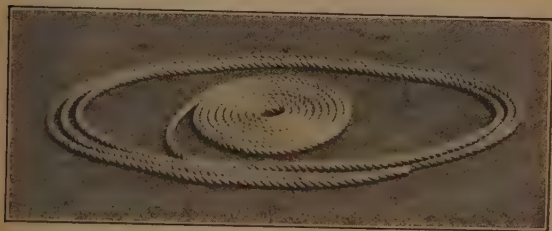


FIG. 161.—Flemishing down rope

handed for left-handed rope. Boat falls which are to be clear for running are often faked down, as this presents a neater appearance than an ordinary coil. (See figs. 160 and 161.)

To fake down a falls, first out all kinks or turns in the falls by leading it out and unwinding them toward the end. Then, beginning with the end of the falls, coil down the falls in a flat coil, the ends of each coil laying on top of the ends of the previous coil. (See fig. 162.)



FIG. 162.—Faking down rope

LINES USED IN MOORING A SHIP TO A DOCK

When mooring a ship to a dock, the following lines, shown in Figure 163, are usually used:

The bow line and forward springs prevent the ship from drifting astern. With sternway on, both these lines when secured tend to breast the ship into the dock.

The stern and after springs prevent the ship from drifting forward. With headway on, both these lines when secured tend to breast the ship into the dock.

NOTE.—When ships are coming alongside a dock, they usually leave 10 feet or more space clear so as not to touch the dock. Tugs then, in the case of large ships, breast them into the docks. With small ships and also with large ones when tugs are not available, the ship can be breasted into the dock by means of the bow and stern breast lines and the bow and quarter springs. By first going slowly ahead with the after quarter and after bow springs and stern breast line secured and then going astern slowly with the bow breast line and forward springs (forward bow and forward quarter) secured.

The forward and after breast lines prevent the ship from drifting away from the dock.

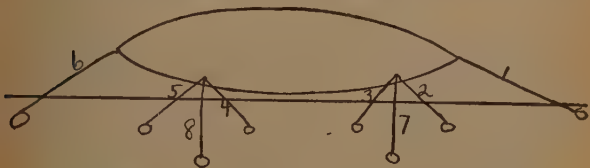


FIG. 163.—Lines used in mooring ship to dock

- | | |
|----------------------------|---------------------------------|
| 1. Bow line. | 5. After quarter spring. |
| 2. Forward bow spring. | 6. Stern line. |
| 3. After bow spring. | 7. Forward breast (bow breast). |
| 4. Forward quarter spring. | 8. After breast (stern breast). |

All lines, where they are subject to wear, as where they go through the chocks on the ship and where they rest on the dock, should be protected by chafing gear. This is usually old canvas strips wrapped around the lines and secured with lashings.

Rat guards are always put on the mooring lines to prevent the rats from coming aboard over them. They

consist of a circular metal disk, made in halves, which can be lashed together on the lines.

Some large ships have **mooring staples** secured on their sides to which chains can be attached for securing them to the dock. Battleships usually have three on each side.

ANCHORING

Nothing indicates a smart ship better than the seamanlike manner in which the ship comes to anchor. When the anchor goes down, the colors should be run up on the flagstaff, all booms should be rigged out smartly and together, and both gangways lowered together. As soon as the colors have been hoisted to the flagstaff, the colors at the gaff should be lowered smartly.

The ship should always be neat and trim when entering port, with all hands on the topside in the uniform of the day.

RIGGING

Running rigging must always be slacked up in wet weather, as the rope shrinks when wet and the rigging may become so taut as to part or carry something away. Dew at night is sometimes heavy enough to thoroughly soak the lines, and therefore all running rigging should be slacked off every night. This applies especially to all signal and flag halliards. Smoke-pipe guys should be slackened when steam is formed in the boilers under them, as the heat from the gases causes the smoke pipe to expand considerably.

Standing rigging, if of hemp, is protected from the weather with a coating of tar oil and coal tar. This must be renewed at regular intervals. Wire rigging is

protected by being galvanized and then wormed, parceled, and served and coated with tar oil and coal tar. If the wire is not galvanized, it should be covered with a mixture of red lead and boiled linseed oil before worming, parceling, and serving.



FIG. 163a.—Heaving line—ready position

HEAVING A LINE

A heaving line is a light line used for the purpose of getting a hawser ashore when mooring a ship to the dock or passing a heavy line for any purpose what-

ever. One end of the heaving line is fitted with a fairly heavy weight to assist in getting distance when heaving. The other end of the heaving line is bent to the hawser with a clove hitch. The rest of the heaving line is carefully coiled; about two-thirds of this coil is held loosely in the left hand and the rest in the right or heaving hand. In heaving, the arm should be held



FIG. 163b.—Heaving line—beginning to heave

straight and the line in the left hand allowed to run out freely. The most frequent trouble in getting a long heave is due to the coil in the left hand not being arranged clear for running. Frequent practice is neces-

sary to become proficient, and everyone should practice making casts at every opportunity. A poor cast, when a good one is necessary, is always a reflection on the ability of the seaman. (See fig. 163 a-c.)



FIG. 163c.—Heaving line—finish of heave

CLIPPING A JIGGER ON A ROPE

A jigger is a light luff tackle having a single and double block, the double block is usually fitted with sister hooks and the single block fitted with a hook. The single block is always hooked to the weight to be hoisted, or to some fixed part, and the double block is clapped on the rope. In this position a pull on the jigger will exert about three times this pull on the single block. A man pulling 150 pounds will be able to lift a weight of about 450 pounds. The jigger is used frequently aboard ship where a heavy pull is re-

quired and only a few men are available. A lifeboat, for instance, which has been lowered by the stern for draining can be two-blocked by one or two men by clapping a jigger on the after fall.



FIG. 164.—Clapping a jigger on a rope

To clap a jigger on a rope, a strap is wound around the rope and the jigger hooked into the two ends. Sometimes the upper end of the strap is brought down to the lower end and looped over it; the jigger is hooked to the lower end. (See fig. 164.)

DEFINITIONS OF SEA TERMS AND EXPRESSIONS

Aback.—A sail is aback when the wind acts on its forward surface.

Abaft.—Behind; in the rear of; on the after side.

Abaft the beam.—Astern of the line forming a right angle with the keel.

Abeam.—Opposite the center of the ship's side, or 8 points from bow and stern.

Aboard.—On the ship.

About.—To go about is to change the course of a ship or boat under sail from one tack to another.

Alee.—The tiller is alee when it is pointing to leeward; tiller down.

All hands.—The entire ship's company.

Aloft.—Overhead; on some part of the mast or rigging.

Alongside.—Close to the ship's side.

Anchor.—To let the anchor go to hold the ship in her assigned position.

Anchorage.—Ground fit to anchor on; a berth for the ship.

Ashore.—On land; also applied to a ship when aground.

Astern.—Behind the ship.

Avast.—Stop; cease hauling.

Bare poles.—A sailing ship is under bare poles when she is under way without sail set.

Battens.—Strips of wood, such as those secured over the tarpaulins of a hatch to batten down in bad weather; also strips of wood fastened to spars to take chafe of gears; chafing battens.

Bear a hand.—Hurry up.

Bearing.—The direction an object bears from the ship; either the compass direction or direction referred to the ship's heading.

Beating to windward.—Sailing a vessel so that the final course made good is in the direction from which the wind comes; by tacking or wearing.

Becalmed.—No wind to fill the sails.

Belay.—Make fast by belaying; to make fast, secure, or stop.

Berth.—An anchorage. A station. A sleeping billet.

Betwixt wind and water.—That portion of the vessel along the waterline which, when the vessel rolls, is alternately above and below water.

Block.—A support of wood or iron for sheaves.

Block and block.—When the two blocks of a tackle have been hauled together by hauling on the tackle; also called "two blocks."

Boarding.—The act of going on board a vessel, either for the purpose of getting information or of extending courtesies.

Boat cloak.—A cloak used by officers in a boat.

Boat cloth.—A large cloth spread out in the stern sheets of a boat for the use of officers.

Bollard.—A vertical timber or iron post on the dock to which a ship's hawsers are secured.

Boom.—A spar used to extend the foot of a sail; also in handling weights, etc.

Bouse.—To haul on.

Brig.—Where prisoners are confined on board men-of-war.

Brow.—The gangway leading from ship to shore when moored alongside a dock.

Bulkheads.—Partitions in a ship.

By the broad.—Over the side. A mast goes “by the broad” when it carries away.

By the head.—A term applied to a vessel when she is deeper forward than aft.

By the stern.—Applied to vessel when she is deeper aft than forward.

Call.—A pipe or whistle used by the boatswain or his mates in calling all hands for any purpose, or in passing orders.

Camel.—A float provided to keep a vessel off and so prevent injury to her side when moored to a dock.

Canted.—Turned from its square position or state. Inclined to one side.

Cast.—To pay a vessel's head off and bring the wind on the desired side, as to **cast to port**. To take a sounding or cast the lead.

Catch a crab.—Catching an oar in the water in the wrong way while rowing.

Cat's-paw.—A light air causing a ripple on the water for a few minutes. The name of a knot also.

Chockablock.—Full; filled to the extreme limit.

Coaster.—A vessel engaged in running up and down the coast.

Cockbill.—A yard is cockbilled when one yardarm is cocked up above the other; an anchor when hanging by ring stopper up and down.

Check.—To ease off.

Clap on.—To take hold of.

Clamp down.—To wash down the decks by use of wet swabs when undesirable to put much water on the deck.

Call the watch.—To call the men who are to relieve the watch on deck.

Chafe.—To rub and wear.

Clear for running.—A rope so laid down that it can run through leading blocks without danger of fouling.

Dog vane.—A small wind vane placed on truck or above rail.

Derrick.—A spar supported by guys and a topping lift, with a purchase for hoisting heavy weights made fast to it.

Dismantle.—To unrig a vessel and discharge all stores.

Dolphin.—A piling or a nest of piles off a wharf or beach or off the entrance to a dock for mooring purposes.

Douse.—To lower; to let down, as to “douse” sail.

End for end.—To shift one end of a rope to the position occupied by the other.

Fake.—One complete circle of a rope in a coil. A number of such turns make a tier or sheave, and several tiers superimposed, a coil. **To fake a line** is to coil it down carefully, in opposition to **coil**, which is to perform the work loosely or hastily.

Fenders.—Pads or bundles of soft material put over the side to protect the side when coming alongside.

Flatten in forward.—To haul the head sails flat aft.

Flagship.—A name applied to a vessel with a flag officer's flag hoisted.

Flemish down.—To coil down a rope in concentric coils, closely pressed together.

Forging ahead.—Going ahead slowly.

Fend off.—To shove off.

Fish a mast or spar.—To secure it when broken or weakened by winding with rope or chain around pieces of wood or iron, called fishes, which are laid along the spar.

Full due.—To secure permanently; secure for a full due.

Field day.—Day for cleaning up of all parts of a ship.

Freshen the nip.—To set up again; to veer on the cable or pull upon a backstay to shift the chafe from a particular spot.

Granny knot.—A knot similar to a reef or square knot with the upper turns crossed the wrong way.

Gaff.—A spar abaft the after mast where colors are flown when under way.

Guess warp.—A line led from the deck forward to the lower boom for securing boats.

Guys.—Side braces for booms.

Haul.—To pull on. Also applied to the wind when it is shifting.

Heaver.—A steel pike with wooden handle, used to heave strands in splicing.

Heave-to.—To deaden a vessel's headway by bracing some of the sails back. To stop a vessel under sail without taking in sail.

Holystone.—A sandstone, used in holystoning decks.

House.—To secure in position for wet or windy weather. (Awnings and topmasts are housed.)

Irish pennants.—Rope yarns or loose ends hanging about the rigging or deck. The appearance is very unseamanlike.

Jigger.—A light luff tackle used for various deck work.

Labor.—To roll or pitch heavily.

Lend a hand.—To assist; to aid.

Let go by the run.—To let go all at once, as by throwing rope off a pin.

Lower booms.—Swinging spars along the ship's side to which ship's boats secure.

Off and on.—Coming alternately near the land, and then standing off again.

Offing.—Out at sea; well clear of land.

Overboard.—Outside of the ship.

Overhaul.—To take apart, thoroughly examine, and repair. To overtake.

Pipe down.—A boatswain's call denoting the completion of an all-hands evolution, and that you can go below.

Painter.—A rope in the bow of a boat by which she is made fast.

Passing the word.—Repeating an order or call so that it may be heard.

Palm and needles.—Sewing instruments used in sewing sails or canvas.

Pendant.—Short wire rope attached to boom with eyesplice in other end for securing boats.

Pricker.—A small steel spike used by sailmakers for making eyelet holes.

Rake.—The incline which most masts have toward the stern of the ship.

Relieving tackles.—Tackles used to assist or take the place of the wheel ropes.

Right.—To raise to an upright position.

Ride.—To be held by the cable, as a vessel riding to her anchor.

Ridgerope.—The rope to which the edges of the awnings are hauled out.

Round in.—To haul in, as round in the main brace.

Rouse out.—To haul the slack part of a cable from the chain locker up on deck.

Run down.—One vessel fouling or sinking another by running into her.

Quarter booms.—Boat booms aft.

Screw.—The propeller.

Scotchman.—A piece of iron with ring attached, seized to the shrouds.

Sheer off.—To shove off; to separate by altering course.

Sheers.—Two or more spars raised at an angle, lashed and supported by guys, having purchases for raising masts or heavy weights.

Span.—A piece of rope or chain made fast at each end; between davits heads, for instance.

Spur shores.—Long timbers used to keep a ship off a dock. The heel of the spar is lashed to the ship's side and the other end rests on the dock.

Squilgees.—Wooden clamps holding a piece of rubber, used for drying decks.

Strike the colors.—To lower the flag in surrender.

Swab.—A mop of rope or canvas yarns used for drying decks.

Swamp.—To sink by filling with water.

Scuttle.—To make holes in a ship's bottom to sink her; a round or square opening in the deck.

Ship.—To take on board. To enlist; to serve on board ship.

Shiver.—To cause the sails to shake by the wind.

Slack of a rope.—The part that hangs loose.

Slew.—To turn about.

Stand by.—To be ready.

Strap.—A piece of rope spliced to form a loop. Used to sling weights or to secure a shackle to any object.

Swing.—A ship turns or swings to her anchor with the wind or tide.

Swing ship.—To head the ship successively on the various points of the compass for obtaining the error of the compass.

Tackle.—A combination of rope and blocks for the purpose of increasing power.

Taut.—Tight.

Tarpaulins.—Canvas covers for hatches, for covering or protecting decks.

Topping lift.—A steel wire supporting the outer end of a boom.

Trim.—To arrange the vessel in desired position, as trim the boat.

Truck.—A cap at the summit of a flagstaff or mast-head.

Turn to.—To start all hands at work.

Turnbuckle.—A link with an adjustable screw for connecting two parts of a bar or a rod together; used on Jacob's ladder, ridge ropes, guys, etc.

Unship.—To take anything from the place where it is installed for use.

Veer.—Let out.

Veer and haul.—To veer on one part and haul on another, both connected to some spar or movable article; also to the shifting of the wind.

Water-logged.—When a vessel is so full of water as to be heavy and unmanageable.

Weather gauge.—To windward of; to get the better of.

Weigh.—To heave an anchor out of the ground.

Wind ship.—To turn her end for end, at a dock, for instance. (Pronounced *wind*.)

Wind-bound.—Detained by contrary winds.

Windfall.—A rush of wind from the high land; a stroke of good luck.

Yards.—Spars suspended horizontally from a mast. The center of the yard is termed the *slings*; the ends of the yard are termed the *yardarms*; and the part between the yardarms are termed the *quarters*.

Yaw.—To deviate from a course. A vessel sometimes yaws back and forth in steering.

BOAT LINES, AND THEIR USES

A boat line is a line leading from the deck well forward to the gangway. A light line made fast to the gangway is attached near the end of the boat line for hauling it in. When not in use, an end of the boat line is neatly flemished down on the gangway.

The boat line is passed to boats whenever a strong tide is running, or when heavy winds or heavy seas make it impossible for the bowman to hold on with his boat hook.

SPREADING AWNINGS

Awnings are canvas coverings spread over the decks of a vessel to protect the crew from the weather. Awning stanchions secured around the rail of the ship support the ridgerope to which the awning is hauled out by means of the earings and stops. The middle of the awning is held up by a strong jackstay leading fore and aft and supported by intermediate stanchions to the deck.

When the order is received to spread awnings, the awnings are broken out from the hold and placed in their proper place on deck. Everything should be done by order and together. The division petty officer directs the operations and the orders given are as follows:

Loose awnings.—Stops are cast off. Awning is spread out in two folds on deck preparatory to hauling one side over the jackstay.

Haul over jackstay.—One side of awning is hauled over the jackstay. It now lays suspended from the backbone and is made fast forward and aft after having been tautened out by use of a fore and aft tackle. It is very important that the awning be well tautened out

at this time in order to have it spread properly without wrinkles. The earings are rove off and manned.

Haul out the earings.—All earings are hauled out taut. If large spaces occur between earings, a stop midway between earings should also be hauled out. The earings must be hauled taut to get a good spread of the awnings.

Lay up and bring to the stops.—All men of the division lay up on the rail and bring to the stops, equalizing their intervals on both sides of the awning. All ends of both earings and stops must be neatly expended so as to present a seamanlike appearance.

Lay in.—Men on the rail lay in together.

Pipe down.—Men are dismissed.

HOUSING AWNINGS

Awnings are housed during wet weather so as to allow them to shed water better. This is also done on order and together. At the command **House awnings**, the men of that division go immediately to their stations under their awning. The other orders are as follows:

Lay out.—Men lay out on the rail, equalizing their distances on both sides of the awning.

Cast off the stops.—Two or more stops between each earing are cast off.

Bring to the stops.—The cast-off stops are brought to tautly to the upper life line on the rail and ends neatly expended.

Lay in; pipe down.—Men lay in and are dismissed.

FURLING AWNINGS

Awnings are often furled on the backbone or jackstay temporarily to prevent them from being carried

away in case heavy winds are expected. This is done in order and together. At the command **Furl awnings**, all men repair to their stations under their awning. The other orders follow:

Lay out.—Men lay out to the stops and earings.

Cast off the stops.

Cast off the earings.—After the earings are cast off, one side is hauled over and placed together with the other half of the awning.

Furl awning.—Men distribute themselves along the awning and make a taut furl up to the backbone, where it is stopped, to hold it in place.

In case the awning is to be furled and stowed away, the same procedure as above is followed except that the awning is taken off the jackstay. It is important that the awning be absolutely dry before it is stowed below, as it will otherwise be soon destroyed by mildew.

CHAPTER 36

GROUND TACKLE; MOORING SHIP

GROUND TACKLE

Ground tackle is a term given to all gear used in anchoring. It includes the anchors, anchor chains, chain stoppers, mooring swivels, shackles, etc.

ANCHORS

Formerly the old-fashioned two-arm anchor with stock at right angles, known as the Navy type anchor, was used almost exclusively. Recently, however, this anchor has been almost entirely replaced by various forms of patent anchors without stocks. Among these are the Baldt, Dunn, Admiral, Allison, and Federal. All these anchors have two flukes in the mud at once. They differ from one another principally in the way the shank is attached to the crown and the flukes. (See fig. 165 for figures of the old-fashioned anchor and a typical patent anchor.)

The parts of an anchor are:

Shank.—The long middle part of anchor from ring to crown.

Ring (shackle or jew's-harp).—The large shackle attached by a riveted pin to the upper end of the shank. The chain is shackled to the ring.

Arms.—The pieces extending from each side of the lower end of the shank. They form hooks which bury in the ground when the anchor is let go, and thus hold the ship stationary.



Fig. 1
Old Fashioned
Anchor.

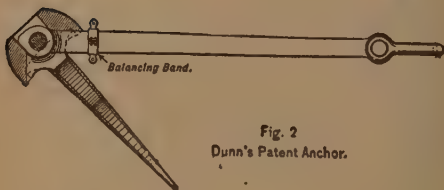


Fig. 2
Dunn's Patent Anchor.

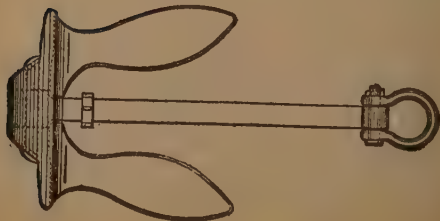


Fig. 3
Anchors, U. S. Navy.

Palm or fluke.—The broad piece shaped like a shield that is on each arm.

Blade.—The part of the arm at the back of the palm.

Bill.—The part of the arm beyond the palm. Extreme end of the arm.

Crown.—The lower end of the shank where the arms are welded on.

Throat.—The upper curved part of the arm where it joins the shank.

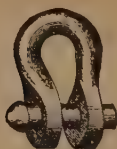
Stock.—The beam placed at right angles to the shank. It runs through a hole in the shank below the ring. Since it is at right angles to the arm, when the anchor is dropped it cants the anchor and causes the flukes to take in the mud. Anchors that have both flukes take in the mud at the same time rarely have stocks. They do not need canting. Such an anchor lies on its side. (See fig. 166 for parts of an anchor.)

Anchors are made of cast steel, except that the stocks of the old-fashioned anchors and the shanks of the patent anchors are made of forged steel. Patent anchors have the advantage over the old-fashioned anchors in that they can be easily housed in the hawse pipes and secured with deck stoppers. The old-fashioned anchors have to be “catted” and “fished” to secure them on the billboard. Patent anchors are also less liable to foul, due to the absence of the long stock. When housed, they do not offer any interference with gunfire as did the old-fashioned anchors when secured on the billboard. Old-fashioned anchors of the same weight have a better holding power than the patent anchors.

Old-fashioned or Navy type anchors are still used on small vessels and destroyers. It is difficult to arrange the hawse pipe in the narrow bows of these vessels suit-



OPEN LINK



SHACKLE



STUD LINK



SWIVEL

CLUB LINK

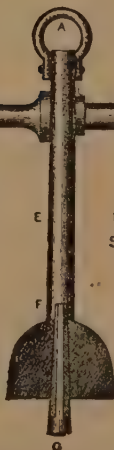


PARTS OF ANCHOR

- A Jew's Harp or Ring
- B Stock
- C Fixed Ball
- D Movable Ball.
- E Shank
- F Fluke
- G Crown

Length of cable 120 fath.
Shackles at

5	"
45	"
60	"
75	"
90	"
105	"



One swivel is placed near the inboard end of the first 5-fathom shot

FIG. 106

able for housing any of the patent anchors. Satisfactory housing arrangements for stockless anchors on destroyers have been developed recently and future vessels will probably be equipped with stockless anchors. Kedge anchors on battleships are usually of the Navy type.

The following anchors are used aboard ships of our Navy:

Bowers.—The anchors carried on the bows. Two on each vessel.

Stem anchors.—Stockless anchors carried in center-line (bow) hawse pipe.

Sheet anchors.—Spare anchors about the size of bowers. Sometimes two are carried; usually only one. As a rule, they are carried on the bows on separate billboards or in the hawse pipes.

Stream anchors.—About one-third the weight of the bower anchors. Usually for work too heavy for a kedge and not heavy enough for a bower. This is often carried astern.

Kedges.—Small anchors used for light work, such as warping or kedging. The heaviest of these may weigh a ton.

GENERAL INFORMATION ON TERMS USED

(a) **Hawse holes** are holes in the bows of a ship for the chain cable to pass through. The heavy steel pipes fitted in the hawse holes, which take the chafe of the chain, are called the **hawse pipes**.

(b) The **billboard** is a shelf or ledge on the ship's side at the bow on which the anchor is secured.

(c) The **cathead** is the davit near the bow fitted with the catting falls for catting the anchor. **Catting** is hoisting the anchor to the cathead. **Fishing** is hoisting

the fluke of the anchor on the billboard. The anchor is secured on the billboard by means of the ring stopper and shank painter, two small chains secured to the fore-castle and passed under and then over the anchor to the tumbler on deck. When the trigger on the tumbler is released the ends of both chains are released and the anchor is free to fall.

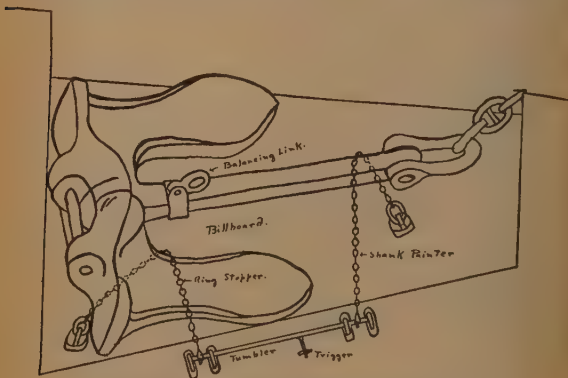


FIG. 167.—Anchor storage on a modern cruiser

Patent anchors are simply hauled into the hawse pipes and secured, doing away with all catting and fishing gear. On ships now using the old-fashioned anchors, or using patent anchors secured on a billboard, the anchor is usually fitted with a **balancing link** at the balance. The anchor is hove in until the balancing link is above water. The **cat and fish** falls are then hooked into this link and the anchor hoisted up on the billboard in one operation.

(d) **Warping and kedging.**—Warping is the name given to the act of hauling a ship around into a certain position by making the end of a line fast to an anchor, or securing it on the beach, and then moving the ship by hauling on this line. Kedging is a term applied to hauling the ship ahead by planting light anchors ahead in succession and hauling up to them. As soon as the ship reaches the first anchor, it is weighed and carried ahead; meanwhile the ship is hauled ahead on the second anchor. Warping is often resorted to at the present time when at anchor in port in order to haul the stern of the ship around so as to get the wind abeam in tropical countries, or to have the ship lie in a fixed position for various purposes connected with gunnery training. In cases of grounding, a kedge is put out as soon as possible to hold the stern out from the beach. Kedging was formerly used a great deal with sailing ships for getting out of a harbor in a calm or against light headwinds.

(e) **Power windlass.**—This is a machine for weighing the anchor by power. Briefly, it consists of one or more wildcats. The wildcats take hold of the chain with whelps, and, as the windlass turns, the chain is hauled in. Each wildcat is usually arranged to turn freely on the spindle so that the anchor can be let go without removing the chain from the wildcat. A brake band on the wildcat controls the chain as it runs out; the brake can be so tightened as to hold the chain. On the older battleships the wildcats were located on a horizontal shaft; as many as four were sometimes on the same shaft. Later vessels have two or three vertical windlass shafts with the wildcats at the top revolving in a horizontal plane. On the very latest ships the wildcats are operated by electric motors

instead of steam engines. Only the smallest sizes of windlasses—for example, as are installed on destroyers—have a capstan over the wildcat so that they can be operated by hand by means of the capstan bars. Small windlasses on tugs and barges are also operated by hand by means of capstan bars.

(f) **The capstan** is a barrel-shaped apparatus, driven by the windlass and used for moving heavy weights as anchors, heaving in on lines when mooring ship, etc. On small ships it is fitted with pigeonholes, in which the capstan bars are fitted so that the capstan can be operated by hand power. Before the days of steam, the anchor was always hove-in in this manner. The capstan is always fitted with pawls, which fall into notches in the pawl rim secured to the deck so that it is kept from turning backwards.

(g) **Chain cables.**—Chain cables now in use are made of wrought iron, forged mild steel, or cast steel. The links of the wrought-iron and forged-steel cables are made from straight bars which are heated and the ends scarfed; the bars are then bent to the shape and size of the links; the ends being left open sufficiently to thread the unfinished link through the preceding link. After this operation the open end of the unfinished link is reheated, lapped and welded, under power hammers and dies designed for this purpose. The forged steel stud which prevents kinking of the chain is then inserted, and the sides of the link struck one or two light blows with the hammer to tighten the stud in place.

In the cast-steel cable one-half of the number of links required for any shot of chain are cast separately and form the odd-numbered links. These links, which are termed "precast" links, are laid out with proper spaces between them on a long concrete table and the connect-

ing links are then poured around them by means of through interlocking molds, thus forming a complete shot of chain. After these shots are cast, they are "tumbled" to remove scale, projections, etc.

The chain is then tempered by being heated to a temperature of about $1,600^{\circ}$ F. and cooled in tanks filled with water. To relieve any internal strains set up by the tempering process, the chain is next annealed or softened by reheating it to about 900° F. after which it is cooled slowly in the furnace. Finally the chain is tested to make sure that the workmanship and strength of the metal comply with naval specifications.

Hereafter all chains for the Navy will be made of cast steel, including shackles and swivels. Cast-steel chains are approximately 60 per cent stronger than the welded chains. The studs are cast integral with the links and can not fall out as in the welded chain. This eliminates the danger of the chain kinking that occurs when studs are missing.

The size of all chain is determined by the wire diameter taken at the crown of the link. The links of the 5-fathom shot made fast to the anchor are usually one-eighth inch larger in diameter than the rest of the chain. After the 5-fathom shot formerly there was a 40-fathom shot, and all other shots were of 15-fathom lengths. At present all the shots are 15-fathom lengths. The length of chains vary from 60 to 180 fathoms.

The previous use for 40-fathom shots was made necessary to keep the connecting shackles from being on the wildcat when the anchor was breaking ground with about 30 fathoms of chain out. The advent of the Kenter connecting shackles permits the substitution of an equivalent number of 15-fathom shots for the

40-fathom shots. These shackles being of the same size and shape as the common links in the cables, they can accordingly be taken by the wildcats as satisfactorily as the common links.

The chains are marked at intervals of 15 fathoms from the anchor by painting marks on the chain. The kind of marks used vary on different ships, and all men should learn how the chains on their own ships are marked.

Chains are stowed in chain lockers in the forward part of the ship, below the windlass. When heaving in, men, called "chain tierers," are detailed from the various deck divisions to go into the chain lockers and stow the chain fore and aft in tiers.

The inboard end of the chain is secured in the chain locker by reeving it through a ringbolt in the bottom of the locker and securing it by a pelican hook on the upper side of the locker. This end is called the bitter end.

As a general rule, in calm weather, about four or five times as much cable is put out as the depth of the water. In heavy weather this is increased as necessary. A long scope of chain on one anchor is much better than two anchors with half as much chain on each, as the long scope gives a straighter pull on the anchor, tending to bury the flukes deeper in the mud, whereas a short scope will tend to break out the flukes and cause the anchor to drag.

Cables are slipped in emergencies by unshackling one of the shots or by letting go the bitter end made fast in the chain locker.

Cables are roused up on deck at regular intervals for cleaning and overhaul. This is called **ranging cable**.

Veering chain is a term used for paying out more chain; that is, to let out a greater scope of chain.

(*h*) **Bending shackles.**—Bending shackles are used for bending the various shots of chain together. Formerly **U**-type shackles were used, which also necessitated having enlarged open links at the end of each shot, as the **U** shackles would not fit in the standard sized links. The combinations of these big open links and the **U** shackles often caused the cables to jump on the wildcats, which caused severe strain on the windlass and cable. The **U** shackles also had a tendency to spread open under heavy strains, making the cables unreliable. The Kenter shackle is now standard in the Navy. The enlarged open links are no longer necessary, as these shackles fit in the standard-sized links, and these enlarged links have been removed. This shackle is the same size as the links in the chain, which eliminates all trouble on the wildcat. (See Fig. 168 for the Kenter shackle.) Another shackle, called the detachable link, is being tested and may, if found satisfactory, replace the Kenter shackle for various uses. This detachable link is similar to the Kenter shackle, except that where the Kenter shackle consists of two interlocking half sections held in place by a stud and locking pin, the detachable link consists of a **C**-shaped link, together with coupling plates which form one side and the stud of the link.

(*i*) **Swivels** prevent turns in the cable as the ship swings at anchor. They are placed near the inboard end of the 5-fathom shot so that they never come over the wildcat. The **mooring swivel** is a large swivel, fitted with four links and four shackles to which the anchor chains can be made fast in mooring ship. This swivel prevents the formation of turns in the two anchor

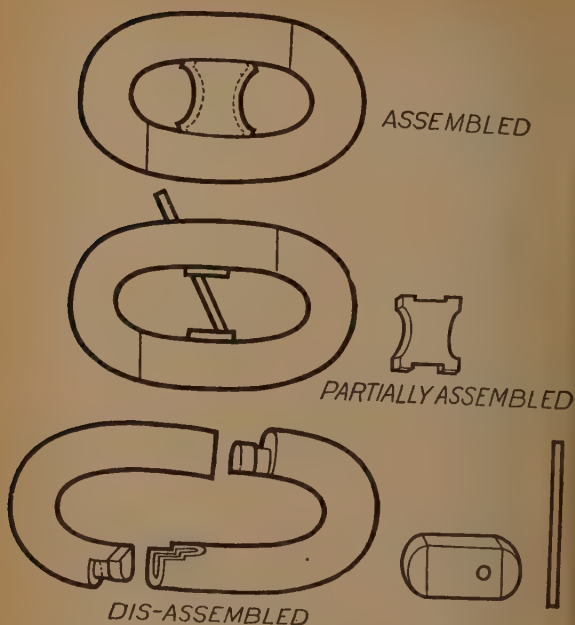


FIG. 168.—Navy standard Kenter shackle

chains as the ship swings at anchor. All swivels must be kept well lubricated by placing a mixture of white lead and tallow in the cup. Swivels are always put on with cup up.

(j) **Anchor buoys** are small buoys, made fast to the crown of the anchor with a small buoy rope, and mark the positions of the anchors when down. The anchor buoy is "streamed"; that is, let go over the side, with the buoy rope well clear, just before the anchor is let go. The buoy is said to be "watching" when it floats on the surface over the anchor. If the buoy does not "watch," the buoy rope is too short, or foul, or the buoy itself is water-logged and has sunk.

(k) The expression "**How does the chain tend?**" is used when the direction which the chain tends after leaving the hawse pipe is wanted. The proper answer to this expression is "**The chain tends broad on the starboard bow,**" "**Two points on the port bow,**" etc.

(l) **The controller** is an apparatus that catches each horizontal link of the chain as it is hove in. In case the cable slips off the windlass, or anything else goes wrong, the controller will hold it from surging or running out. In mooring ship the controller and the stoppers hold the chain while the mooring swivel is being put on. Controllers have been omitted from recent naval vessels because they cause considerable wear on the chains.

(m) **The compressor** is a curved bar of iron which sweeps across the mouth of the chain pipe below deck, hooking the chain in against the lower edge of the pipe. It is pivoted on one end, and has an eye in the other to which a tackle may be hooked. It is used to check the chain after letting go the anchor, also to check the chain in veering and to hold the ship until stoppers are passed. The brakes on the wildcats have replaced the compressor on all the later ships.

(n) **Bitts** are heavy cylindrical castings firmly secured to the deck. It was a custom to take the chain around

the bitts, either one or two turns, for riding or letting go. Bitts are not used for this purpose on the late ships. When both bower anchors are in use, one of the bower chains may be thrown off the wildcat and taken to the bitts. This wildcat may then take the sheet chain. In the latest ships a third wildcat is provided for the sheet chain.

(o) **Dummy wildcats** are wildcats fitted with whelps and brake band in the usual manner, but without any driving gear. They have but recently come into use. They are fitted to the spare chain, and are used for letting go, veering chain, and riding by. These dummy wildcats and the chain stoppers replace the riding bitts that were formerly installed.

(p) **Chain stoppers** are heavy stoppers consisting of a shackle, several links, a turnbuckle, and a releasing hook. They are shackled to heavy pad eyes on the deck, usually two for each chain cable, one located near the hawse pipe and one farther aft, called, respectively, the housing chain stopper and the riding chain stopper.

In destroyers the chain stoppers are made as strong as the chain cable. Only one is furnished with each chain and the ship at anchor can ride on the stopper. On other ships, the stoppers are only about 40 per cent as strong as the chain cable, so that when used to ride by all stoppers for that chain should be used. However, the wildcat should always be disconnected and the brakes set up taut in addition to the use of the chain stoppers. In general, chain stoppers are used as follows, in addition to their uses to ride by at anchor:

(a) For letting go the anchor more quickly than can be done by the brake band when vessels are

mooring in formation. The weight of the anchor is first taken up by the stopper, and then the brake band on the windlass slacked off. To let go, the pelican hook is tripped.

(b) To hold the anchors taut in the hawse pipes when housed.

(c) To hold the anchor chain when disconnected for purposes of mooring ship.

(d) To hold the chain cable from running out while it is being taken off the wildcat, etc.

DEFINITIONS AND OBJECT OF MOORING SHIP

A ship is moored when she has two anchors down at considerable distance apart, with such a scope of chain on each that she is held with her bow practically in one place between the anchors, regardless of tide. When a ship is moored, she will swing practically about her own bow as a pivot. The extent of her swinging will depend on the tautness with which she is moored. Mooring is resorted to when there is a limited amount of room for a ship to swing.

The flying moor is used by ships of our Navy. When a ship reaches her anchorage, one anchor—for example the port anchor—is let go. The ship keeps way upon her and 90 fathoms of chain are veered on the port chain. The starboard anchor is then let go and the ship's headway stopped by backing her engines. The port chain is then hove in and the starboard chain veered until each anchor has 45 fathoms of chain out and the bow of the ship is midway between the anchors. The mooring swivel is then put on, being always secured first to the chain on which the ship is riding. The ship in swinging to the tide will then ride on one anchor for one tide and on the other anchor for the

other tide. In swinging, the bow will remain midway between the two anchors and the stern of the ship will not make a wide sweep, as would be the case if riding to one anchor with 45 fathoms of chain out. The holding power is that of only one anchor.

The details of mooring ship are given in chapter 49. However, the gear used in mooring a battleship will be given here, with a brief description of it, so that the terms will be familiar to seamen, first class, on the forecandle during mooring.

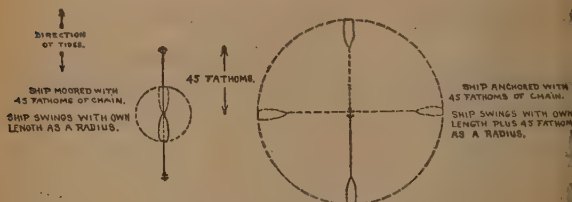


FIG. 169.—Object of mooring ship

(a) **Clear hawse pendant**; $1\frac{1}{4}$ -inch open chain, fitted with pelican hook. Use, to hold port (lee) chain when disconnected preparatory to hauling it around stem through starboard (riding) hawse pipe and making fast to mooring swivel.

(b) **Dip rope**; 1-inch open-link chain, tailed with 3-inch wire rope. Use, to heave port (lee) chain around stem of ship and up through starboard (riding) hawse pipe, where end is shackled to lower free link of mooring swivel.

(c) **Easing out line**; 5-inch hook rope. Use, hooked to end link of port chain and moused; used as an easing away line as dip rope is hove around.

(*d*) **Preventer**; 8-inch manila hawser. Use, to take up port (lee) chain in case of failure of clear hawse pendant.

In addition to the above there are deck tackles, traps, chain hooks, jiggers, heaving lines, set of unshackling tools, Jacob's ladder, and a boatswain's chair.

The mooring swivel is always put on when the ship is moored. Ordinarily, therefore, no trouble should be experienced with a foul hawse unless the swivel freezes. The suggestive stages of foul hawse are as follows:

(*a*) **Cross in hawse**.—The chains cross each other once, the starboard anchor being on the port bow and port anchor on the starboard bow.

(*b*) **Elbow in hawse**.—After putting a cross in hawse, if the ship swings 16 points more in the same direction she puts an "elbow" in the hawse.

(*c*) **Round turn**.—Sixteen points more in the same direction puts a round turn in it.

(*d*) **Round turn and elbow**.—The next half circle after round turn.

Sometimes a cross or elbow can be cleared by making the ship turn the right way to unravel them by using the rudder. A round turn or anything more complicated can only be cleared by the use of the clear hawse ear, which includes the clear hawse pendant, preventer, dipe rope, and easing out line. The lee chain properly secured by means of the clear hawse pendant and preventer, the chain then unshackled, and the turns taken out by means of the dip rope and easing-out line and the chain again shackled.

CHAPTER 37

STEERING, ORDERS USED; RELATIVE BEARINGS; LOG; LEAD LINE; COMPASS; SOUNDING MACHINE (GENERAL)

STEERING

Boats and ships of all sizes are fitted with a rudder by means of which they can be steered. When the rudder is put over, say, to the right of the center line, the water pushes against the rudder, causing the stern of the ship to turn away from the rudder; in other words, it causes the ship to swing. The higher the speed of the vessel, the greater is the resistance when the rudder is put over, and, of course, more power is necessary to use the rudder.

In small boats hand power is sufficient to move the rudder; a tiller is fitted to the rudder for this purpose. In larger ships, however, some form of power is necessary to move the rudder as rapidly as is desired for maneuvering purposes, and ships in the Navy use steam engines or electric motors. All ships, however, are fitted for hand steering in case the engines and motors break down, and, by using a large number of men on the hand steering gears, the ship can be steered in this manner. Under this hand power, however, the rudder can be moved only slowly, and it would be difficult for the ship to carry on any maneuvers.

The steam steering engine or motor is, except in small ships, tugs, etc., located aft near the rudder in the steering-engine room. The hand steering gear is

also in this place. Either the power or hand gear can be connected to the rudder by means of clutches. When connected up they turn two large screws running fore-and-aft, one screw being cut left-handed and the other right-handed. On these screws are two large nuts connected by guide rods to the rudder crosshead. As the screws turn, one nut moves forward and the other nut moves aft, and the rudder is therefore moved either right or left. All men should examine the gear aboard their own ship and see how it operates.

There are always several places from which the ship can be steered. On battleships, there is a wheel on the bridge, in the conning tower, in central station, and aft in the steering engine room. Each station is fitted with a compass and with electric indicators which show how far right or left the rudder happens to be.

For steam steering engines, the steam valve on the engine, which gives it power to go one way or the other, is controlled by a wire rope running over sheaves to the various steering wheels. Each wheel operates this same cable and each is connected to it by clutches. Only one wheel is connected to this cable at one time. The wheel, therefore, connected to the steam valve by means of this wire rope runs the steering engine. Turning the wheel to the right causes the engine to haul the rudder to the right, and the ship's head will then turn to the right. On large ships, the wire rope is so long that the steering wheels are hard to turn and a telemotor is often used instead. This consists of a pair of cylinders forward, connected by pipes to a pair of cylinders aft. Each cylinder has a piston in it, and the cylinders and pipes are filled with a mixture of glycerine and water. The steering wheels forward are geared to the pistons in the forward pair of

cylinders. When the wheel is turned, one piston rises and the other is lowered. When this happens, the liquid in the pipes causes the piston aft to raise and lower the same amount. The valve of the engine is connected to these after pistons so that the movement of the wheel is given to the valve exactly as if a wire rope had been used.

When electric motors are used, an electric controller is installed at each steering station which looks like a street-car controller. These control stations are thrown on by means of a switch on a control panel in the steering-gear room. Only one station can be connected up at one time.

The latest ships use electric power to drive a Waterbury speed gear, which in turn is connected to the steering gear. This system of power is the same as used for turret training. The various steering wheels operate the tilting box in the speed gear just as the training wheel does in a turret.

ORDERS USED

The first command in giving orders to the steersman is one of direction, as right or left, and the steersman starts to turn the wheel in the required direction at once. The second part of the command is one of amount, as Full rudder, standard rudder, 10° rudder, etc. In conning, the officer of the deck may accompany the command to the steersman by a statement as Right rudder; Head for the lighthouse; Left rudder; pass the buoy close to your port hand, etc. This gives the steersman an opportunity to execute the order with intelligence and judgment.

Examples of all orders given a steersman follow:

Right (left), full rudder.

Right (left), standard rudder.

Right (left), standard half rudder.

Right (left), 5° (10° , etc.) rudder.—This order is used in making changes of course. The steersman should then be informed of the new course, by such term as "course 275, in time to permit him to "meet her" on the new course.

Right (left) handsomely.—This order is given when a very slight change of course is desired.

Give her more rudder.—Increase the rudder angle already on to make her turn more rapidly.

Ease the rudder.—Decrease the rudder angle already on when she is turning too rapidly, or is coming to the heading required. The order can be given, **Ease to 10** (**10, 5, etc.**).

Rudder amidships.—In battleships, when making a turn, put rudder amidships when about 20° from the new course.

Meet her.—Use rudder as may be necessary to check but not entirely stop her swing. Given when the ship's head is nearing the desired course, and she is to be kept from swinging past the new course.

Steady or Steady so, or Steady as you go.

Shift the rudder.—Change from right to left rudder or vice versa. Given, for example, when the ship loses headway and gathers sternboard, to keep her turning in the same direction.

Mind your rudder.—A warning to the steersman (*a*) to exact more careful steering or (*b*) to put him on the alert for the next command to the wheel.

Mind your right (left) rudder.—A warning that the ship shows a tendency frequently to get off her course and that if right (left) rudder be not applied from

time to time to counteract this tendency the ship will not make good the course set.

Nothing to the right (left).—Given when the course to be made good is a shade off the compass card mark and therefore that all small variations from the course on steering must be kept, for example, to the southward of the courses set; in other words, given as an order to the steersman to warn him that he must not make anything good to the right (left) of a given course or mark.

Keep her so.—A command to the steersman when he reports her heading, and it is desired so to steady her.

Very well.—Given to the steersman after a report by him to let him know that the situation is understood.

NOTE.—**Standard rudder** is the rudder used by the ship to make a standard turn. All battleships, for instance, when maneuvering together must make the same sized turns. The standard rudder varies on different ships and all steersmen must know what it is for his ship. **Full rudder** is usually 30° rudder. Rudders can usually be put over to a maximum of 35° , but this is seldom done except in emergencies, as there is danger of jamming the rudder when full over. **Standard half rudder** is approximately half of standard rudder and varies on different classes of ships.

Steersmen must always repeat, word for word, orders received from the officer of the deck, so that this officer knows that the proper order has been received. As soon as the steersman has executed the order he reports to the officer of the deck, as "**Right, full rudder, sir,**" "**Left 20° rudder, sir,**" "**On course 257, sir,**" "**Steady, sir.**"

RELATIVE BEARINGS

Lookouts always report anything they sight to the officer of the deck by relative bearings from the ship. There are 32 points to the circle, or 16 points from head to astern. Figure 170 shows the relative bear-

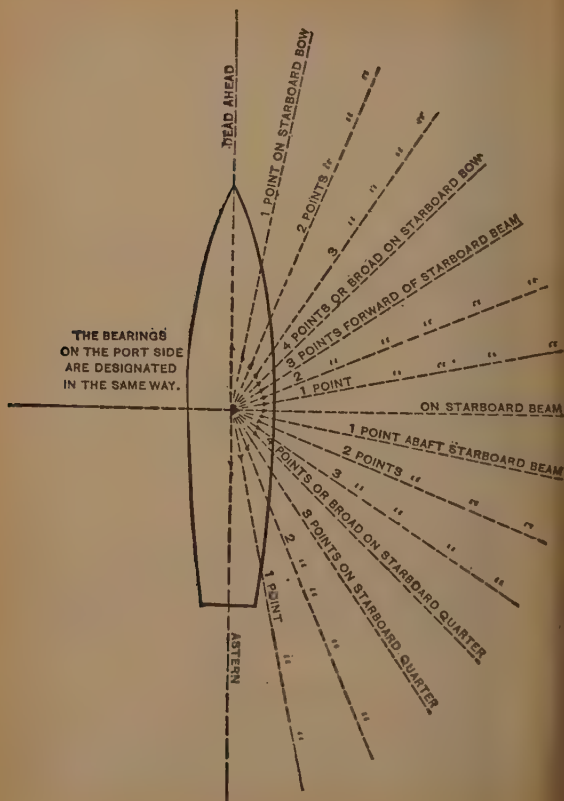


FIG. 170

ings on the starboard side. They are the same for the port side, merely changing "starboard" to "port."

LOG

The speed of the ship through the water is measured by means of a patent log. This consists of a rotator, which resembles a propeller on a ship, which is connected by means of a line, usually about 150 fathoms long, to a mechanism on the rail of the ship which registers the number of miles traveled. The rotator makes a complete turn in the water when it has traveled a certain distance, depending on its pitch, just like a nut travels on a screw. The mechanism on the rail consists of gear wheels and dials like a speedometer on an automobile, and converts the twists of the rotator, which are carried to it by the log line, into miles traveled. The log line is always long enough so that the rotator travels far enough astern not to be affected by the eddies from the ship's propellers.

The rotator is sometimes fouled by seaweed or other drifting substances, and has to be hauled in and cleared. In every case where the log line is hove in, the end which is made fast to the recording mechanism must be stretched out on deck before coiling as the rotator is hauled in so that the turns in the line can be cleared. Otherwise, it would be impossible to coil up the line. The patent log should be hauled in before reaching harbor and before the engines are backed. (See fig. 171.)

HAND LEAD

A hand lead is a line, with a leaden weight attached, used to find the depth of the water. The leaden weight varies from 7 to 14 pounds. It is secured to the line by

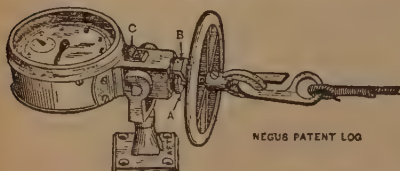
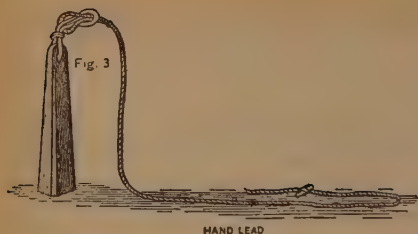


FIG. 171.—Logs and lead

a piece of strong leather. Finding the depth of water is called **sounding**.

Before marking, the line is well soaked, and then marked as follows from the lead:

At 2 fathoms from the lead, with 2 strips of leather.

At 3 fathoms from the lead, with 3 strips of leather.

At 5 fathoms from the lead, with a white rag.

At 7 fathoms from the lead, with a red rag.

At 10 fathoms from the lead, with leather having hole in it.

At 13 fathoms from the lead, as at 3.

At 15 fathoms from the lead, as at 5.

At 17 fathoms from the lead, as at 7.

At 20 fathoms from the lead, with 2 knots.

At 25 fathoms from the lead, with 1 knot.

At 30 fathoms from the lead, with 3 knots.

At 35 fathoms from the lead, with 1 knot.

At 40 fathoms from the lead, with 4 knots.

These are known as the marks. The numbers omitted, as 1, 4, 6, 8, etc., are called the deeps, and they are spoken of together as the marks and deeps of the lead line. On the hand lead there are 9 marks and 11 deeps.

Soundings, to ascertain the depth of the water on entering or leaving port, or in any case where there is supposed to be less than 15 fathoms of water, are taken by the hand lead. A quartermaster, a seaman, or a seaman, second class, is stationed in the chains for the purpose. Soundings are taken while the vessel has headway on; the leadman throws the lead forward and gets the depth as the vessel passes, when the line is nearly perpendicular.

As the 7-pound lead is not heavy enough to sink fast in deep water, a 14-pound lead is used. The latter is about as heavy as a good husky man can handle. A little wooden handle, called the toggle, is lashed across the lead-line from 1 to 2 fathoms from the lead. It is never desirable to have the toggle more than 2 fathoms from the lead and generally $1\frac{1}{2}$ is better. The leadsman on the starboard side heaves with the right hand and the one on the port side with the left. A good leadsman must be able to heave on either side. From a ship with a good, clear sounding platform sufficiently high one ought to get

good soundings in 7 fathoms at 12 knots, 10 fathoms at 10 knots, and 15 fathoms at 7 knots. Seamen used to take a great deal of pride in heaving the lead. It is wonderful exercise, and one who can get good soundings with a 14-pound lead at the speeds and depths listed above will have a forearm to be proud of. In heaving, the lead is given two or three turns forward and up overhead, down at the back, and forward underfoot; it is let go as it goes forward and a little up, so that it does not rise higher than the leadsman's head. If the leadsman is poor, it will probably land on the forecastle. The leadsman must remember that heaving the lead was a fine art with Columbus, and it is still one of the most important aids in navigating the ship among shoals. An unreliable man in this place is a menace to the ship. Trustworthy soundings can only be had by taking in the slack as fast as possible soon after the lead hits the water and feeling the weight of the lead by several jerks when the lead line is straight up and down with *no slack in it*. *Call out the soundings in a voice loud enough to reach the bridge.*

If the depth obtained corresponds with any of the marks, the leadsman sings out, "**By the mark 5,**" "**By the mark 13,**" or whatever mark registers the depth of the water. If the depth is greater than any of the marks, but not one-half of a fathom greater, he sings out, "**And a quarter 5,**" "**And a quarter 13,**" or whatever the registered depth may be. If the depth is one-half of a fathom more than any of the marks, he sings out, "**And a half 5,**" or "**And a half 13,**" or whatever the depth may be. If the depth is a quarter of a fathom less than any mark, he sings out, "**Quarter less 5,**" or "**Quarter less 13,**" or whatever the depth may be. If the leadsman judges by the distance between any two

of the marks that the depth of the water is 4, 6, 8, 9, 11, 12, 14, 16, 18, 19, or 21 fathoms, he says "By the deep 4," or "By the deep 6," or whatever the sounding may be. The reports should be made in a sharp, clear voice; the drawl is no longer allowed.

If no bottom is obtained, that report is just as important as the others. Report "No bottom at ———," whatever the number of fathoms may be.

At night, the leadsman should take the distance from the water's edge to the breastrope, and at each cast should subtract this distance from the mark at the breastrope for his true sounding. This is only necessary where it is too dark to see the marks near the water's edge.

DEEP-SEA LEAD

The deep-sea lead (pronounced "dipsey") is a lead weighing 30 to 100 pounds, with a line correspondingly heavy, marked every 5 fathoms, 1 knot at 5, 15, 25, 35, 45, etc., fathoms, 2 knots at 20, 3 knots at 30, 4 knots at 40, etc. The bottom of the lead is hollowed out, and, before dropping, this hollow is filled with tallow. This is called **arming the lead**. When the lead sinks, this tallow first strikes the bottom and picks up a sample of the bottom. All charts show the kind of bottom, so that navigators, knowing the depth and kind of bottom, can often locate their position accurately by these means.

The deep-sea lead is practically never used in our Navy now, the sounding machine having taken its place. However, in case the sounding machine is out of order, the deep-sea lead would be used.

The lead is taken to the forecastle and the line passed forward on the weather side, outside of and clear of

everything. The men range themselves along the sides, each with a small coil of line in his hand. This line is bent to the lead, and the latter is armed with tallow. The engines are stopped, and when the ship has nearly lost her way the boatswain's mate of the forecastle division sings out "**Watch-ho, watch,**" and heaves the lead over the side, well clear. Each man along the side holds on to the line until he feels the weight of the lead, when he sings out, "**Watch-ho, watch,**" and lets go the bight. No one must let go the line until he actually feels the weight of the lead, otherwise it would not be possible to tell when bottom was reached. The man who obtains bottom while the line is in his hand reads it off as he would a hand lead line. The line is then carried to a light snatch block, hauled in, and the character of the bottom is noted and recorded.

THE COMPASS

A simple, straight bar magnet suspended by a string and allowed to move freely will, when it settles down, point to the north magnetic pole. This is a simple magnetic compass. Of course, this type could not be used aboard ship, but the principle is the same. On board ship we have a circular card which is balanced on a needle point at its center so that it can revolve freely. Attached to this card are four magnets, two on each side of the center. The card is mounted on a pivot in a bowl and the bowl filled with alcohol, which will not freeze. This liquid also keeps the card from wabbling or moving too quickly. On top of the card is a little air chamber to help take the weight of the card and its magnets off the needle point. (See fig. 172.)

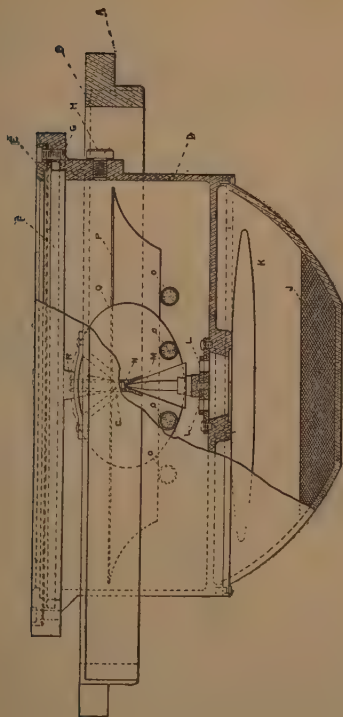


FIG. 172

The lettering of Figure 172 is as follows:

- | | |
|---------------------------------|--|
| A, knife-edges on gimbal ring. | K, expansion chambers. |
| B, gimbal ring. | L, communicating holes between bowl and expansion chamber. |
| C, knife-edges on compass bowl. | M, pivot. |
| D, compass bowl. | N, sapphire cap. |
| E, packing ring. | O, magnets or compass needles. |
| F, glass cover. | P, tinned brass card. |
| G, rubber packing. | Q, air vessel. |
| H, filling screw. | R, centering screw. |
| I, bottom of compass bowl. | |
| J, lead weight. | |

The face of the card is marked with points and degrees. The main or cardinal points are north, or 0° ; east, or 90° ; south, or 180° ; and west, or 270° . Half-way between these main or cardinal points are four intercardinal points, NE., SE., SW., and NW. To box the compass is to name the points in regular succession, beginning with one point and ending with the same. (See fig. 173.)

Below will be given the boxing of the compass in intercardinal points beginning with north and going around to the right back to north, with the corresponding degrees.

	Degrees		Degrees
North-----	0	Southwest-----	225
Northeast-----	45	West-----	270
East-----	90	Northwest-----	315
Southeast-----	135	North-----	360 or 0
South-----	180		

The lubbers' line is a vertical line drawn on the inside of the bowl of the compass to correspond to the ship's head. The point on the compass card coinciding with this lubbers' line gives the heading of the ship, or the



FIG. 173.—Standard Navy compass card

course being steered. Figure 174 shows a Navy standard compass in its gimble rings ready to put in a compass binnacle. Note the lubbers' line which, in this case indicates a course of 343° .



FIG. 174

All courses steered by our ships are given in degrees, as course 45° , course 196° , etc. You should all learn the four cardinal points with their degrees, and also the four intercardinal points with their degrees. The main thing is to know the markings in degrees. The Navy standard compass card, showing the four cardinal and four intercardinal points and degrees, is illustrated in Figure 173.

The earth is a big magnet, with a north magnetic pole and a south magnetic pole. Any magnet on this earth, as the magnets in the compass, will have its north-seeking pole attracted by the north pole of the earth, and, if the magnet can swing around, as our compass magnets can, the north-seeking pole of the magnet will point to the north magnetic pole on the earth. All magnets work on other magnets near them and attract or repel each other. Besides all iron is magnetic and acts like a magnet. The compass, then, unless it happens to be aboard a ship that hasn't a bit of iron in her, is being pulled and pushed by many other magnets due to the iron of the ship. The compass, with its bowl, is placed in a binnacle, or little compass house. (See fig. 175.) Inside this binnacle are magnets and on two arms are two iron balls which are used to neutralize the magnetism of the ship, so that the compass will point to the earth's magnetic pole. The iron on the ship is riveted in place and the compass can be corrected for the magnetism in this iron. But what happens if you come up to take the wheel with a jackknife or a bunch of iron keys in your pocket? This knife and any iron you have in your pockets will contain magnetism and will draw the compass away from the true magnetic pole. Your compass will be in error and you may steer the ship upon the rocks. Therefore, never go near the compass with any iron on your person.

All our big ships, submarines, and many of our destroyers now have gyro compasses as well as magnetic. The gyro compass consists essentially of a rapidly spinning rotor, usually driven by a three-phase alternating current of electricity at a rate varying, according to the type, from 8,000 to 21,000 revolutions per

minute. By a combination of a weight attached to this gyro and the revolution of the earth, the axis of this gyro points to the true north pole. Unlike the magnetic compass, it is unaffected by any magnetic in-

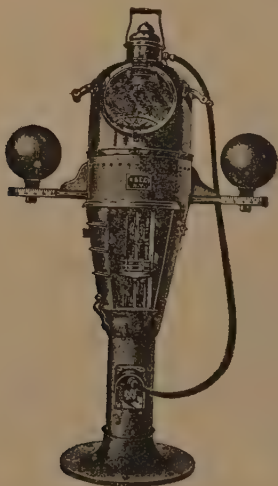


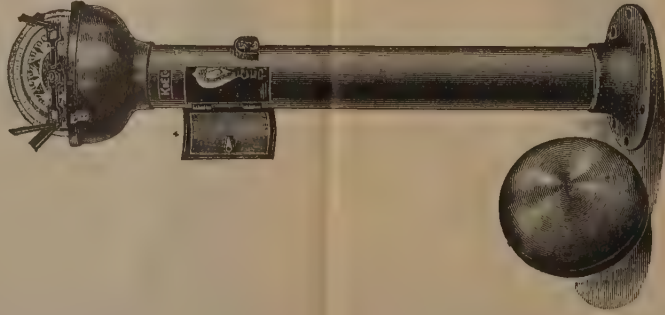
FIG. 175.—United States Navy standard compensating binnacle

fluences of the earth or the ship. From the "master compass," which may be located in a compartment below, electrical connections are made to "repeating compasses" on the bridge, in the conning tower, or in the steering-engine room so that the ship's true heading may be transmitted to any desired part of the vessel.

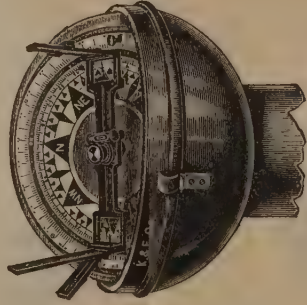
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THE ILLUMINATED DIAL PELORUS.



THE ILLUMINATED DIAL PELORUS.
CHAMBER AND BOWL.

The action of the gyro compass, affected as it is by the earth's rotation under it, conforms to Foucault's general law that "a spinning body tends to swing around so as to place its axis parallel to any impressed forces and so that its direction of rotation is the same as that of the impressed forces."

PELORUSES

Pelorus are instruments placed on the wings of the bridge and used by the navigator for taking bearings of various objects. Figure 176 shows the pelorus stand and a pelorus. The dial is made of glass and is marked like a compass card. The light in the stand illuminates the dial at night so that readings can be taken. The sighting vanes are used like sights on a gun to get accurate bearings on the object. Where gyro compasses are used the pelorus is a repeater compass, and true compass bearings can be taken easily at any time, even though the ship be swinging. Where magnetic compasses only are used, the pelorus is simply a glass compass plate which can be turned around on its center and set to read the same as the ship's heading by compass. In taking bearings with this pelorus, the pelorus must be set to read the same as the ship's compass, and then, when the steersman sings out, **Mark**, when he has the ship on its course, the bearings are taken. These bearings will then be the compass bearings of the objects. The navigator uses these bearings in fixing the position of the ship.

SOUNDING MACHINES

The sounding machine can be used to take soundings without stopping or slowing down the ship.

A sounding machine consists of a stand for holding the drum, upon which is wound several hundred fathoms of galvanized piano wire. The drum is controlled when taking a sounding by a friction brake. A dial indicates the amount of wire out, and must be set at zero before a sounding is taken. The drum is turned by hand by means of two handles, one on each side. To the end of the wire is attached a metal cylinder. Beyond the cylinder and connected to it by a short length of plaited rope is a heavy sinker or lead. The lead has a cavity in its lower end. This cavity is filled with tallow or salt-water soap before a sounding is taken in order to bring up a sample of the bottom. This process of filling the cavity is called **arming the lead**. The metal cylinder carries a slender tube of glass, closed at one end and coated on the inside with a chemical substance which changes color upon contact with the sea water. The tube is placed in the cylinder with its open end down. As it sinks the water rises in the tube, and the air originally contained in the tube is compressed with a force which depends upon the **head** of water acting upon it. As this **head** depends upon the depth, it follows that the compression of the air, and hence the height to which the water rises in the tube, becomes a measure of the depth. With properly coated tubes, carefully used, the top of discoloration is a sharply defined line, and the depth corresponding to this line is read off by means of a scale marked in fathoms. In place of the chemically coated tube a tube made of ground glass may be used. Ground glass when wet shows clear. Consequently a tube of this kind, if perfectly dry in the beginning, should give a clear record of the height to which the water rises in it. Advantage of the ground-glass tube is that it can

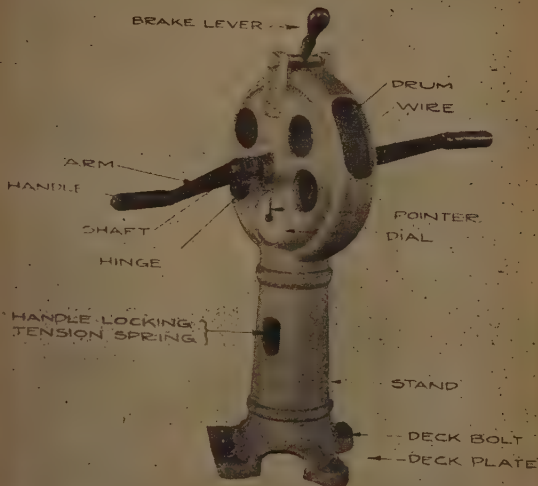


FIG. 177.—Tanner-Blish sounding machine

be used an indefinite number of times if thoroughly dried after each cast. The disadvantage of the ground-glass tube is that the height to which the water has risen is not so clearly defined as it is in the chemically coated tube, consequently the latter is easier to read and therefore more adaptable for night work.

The action of the brake which controls the reel is as follows: The drum has V-shaped flanges. The brake lever has at its lower end a crosspiece with right and left handed screw threads which operate on the two vertical pieces shown at its ends; as the lever is thrown away from the wire the upper ends are

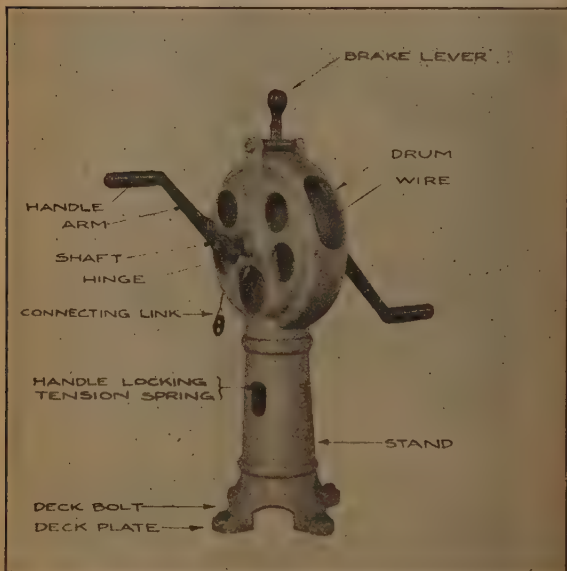


FIG. 178.—Tanner-Blish sounding machine

thrown outward from the casing. The upright pieces are pivoted at the casing so that when the upper ends are thrown outward the lower ends are thrown toward the drum. The lower ends are faced with wooden blocks, which, when thrown inboard, bear against the drum and act as a brake.

To take soundings.—A petty officer and two men are sufficient, but an extra man is desirable when steaming fast and there is much strain on the wire. The petty officer takes the soundings, two men heave in, and the third guides the wire evenly on the drum and occasionally relieves one of the men on the handles. The sinker being attached to the wire, ship the handles, put the sinker over the side, and slack the wire off gently by turning the handles, snatch the wire in the block of the carrier, run the carrier out and belay the outhaul. Let the sinker down until it is almost touching the water, and put on the brake. The petty officer, now holding the brake handle with one hand, presses the feeler gently on the wire with the other. **To let go,** release the brake, then watch the pointer while the wire is running out; the instant the wire slacks apply the brake and read off the number of fathoms of wire out; then stand clear and let the other men heave in. One leadsmen winds with his left hand, and guides the wire on the drum with a piece of oily waste or canvas in his right hand. The other, winding with both hands, reads the counter from time to time during the winding in, and when the swivel or link is 5 fathoms from the fair lead, he calls out "**Hand the lead.**" The petty officer instantly leaves the machine and releases the outhaul. They then wind slowly in until the lead reaches the ship's side. The petty officer then takes the lead on

board, examines the arming for specimen of bottom and prepares the arming for a fresh cast.

When chemical tubes are used, one of the brass guard tubes is lashed to the rope between the wire and the sinker, about 3 feet from the end of the wire. Before taking a sounding be sure the glass tube is placed in the guard with the open end down. When bringing the tube aboard take care that the tube is not turned on its side or upside down, for in this condition the water will run up the glass tube and produce an erroneous mark.

CHAPTER 38

ELECTRICITY

Electricity is known to us only by the effects which it produces. The exact nature of electricity is not known, but the laws governing its actions, the methods of controlling it, and the effects produced by it are well understood. A flow of electricity between two points is similar to the flow of water through a pipe. A body that is charged with electricity to a higher degree than another body would, if connected to that body, discharge its electricity, so as to equalize the electric pressure between them.

If a tank of water is raised to a certain level, say, 10 feet, for example, above the ground, a certain amount of work would have been done on it. This water now, due to its position, has the power to do work equal to the amount of work expended in raising it to its present level. Consider now that we attach a pipe to this tank and have this pipe lead to the ground with a valve at the end. The water will exert a pressure on this valve, due to this head of water. This pressure can be likened to electrical pressure, which is called electromotive force and which is measured in volts. Now, if this valve is opened, the head of water or water pressure will cause a current of water to flow through the pipe. This current of water can be likened to a current of electricity flowing from a point of high voltage to a point of lower voltage. Currents of electricity are measured in amperes. This pipe will

cause a resistance to the flow of water, a small pipe offering a high resistance and only a small current and a large pipe offering low resistance and a large current. A copper wire carrying a current offers a resistance to the flow of electricity in a similar manner. The smaller the wire the larger the resistance and vice versa. Electrical resistance is measured in ohms.

Electricity is a form of energy. To develop electrical energy, some other form of energy must be used. In our Navy we use two methods, one the primary cell where chemical energy is converted into electrical energy, and the other, the electric generator, where the mechanical energy of some type of engine, such as a turbine, is converted into electrical energy. Of course, the turbine gets its mechanical energy from steam, which in turn gets its energy from the chemical combustion of coal or oil, so that, in the end, all of our electrical energy can be said to be developed from chemical energy.

Primary cells consist of two dissimilar metals like zinc and copper which are immersed in an acid solution. The acid solution acts on the zinc more readily than on the copper. On account of this difference in chemical action on these two metals, an electromotive force is maintained between them, in this case the zinc being always at a higher voltage than the copper. If the two plates are now connected with a wire conductor, this voltage will force a current to flow from the zinc plate through the acid to the copper plate and thence through the wire back to the zinc plate. (See fig. 179.)

The zinc plate will wear away and the acid will change into a new chemical composition; and the energy given off during these changes is equivalent to that which appears as electric energy in the wire.

If, while the current is flowing through this cell, a compass needle is placed near the wire, it is found that the needle will move just as though a magnet had been placed near it. In other words, all wires carrying current have a magnetic field about them, just like that of an ordinary magnet. If a rubber-covered wire is wound around an iron bar and a current is sent through this wire, it is found that this iron has become a powerful magnet. This type of magnet is called an electro-

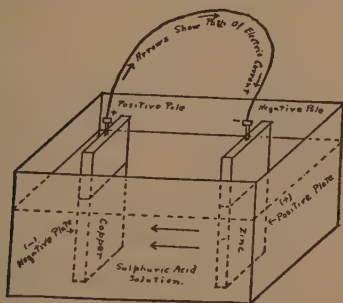


FIG. 179.—Primary cell

magnet and is used in all motors and generators aboard ship.

A magnet is a substance which has the power to attract steel or iron. Natural magnets, which are iron oxides, are found in nature. The earth is a magnet. All magnets have two poles—a north pole and a south pole. Electromagnets act exactly like other magnets. The part of a generator or motor which revolves is called the armature, and most motors and generators have commutators which are fastened to the armatures

and revolve with them. Sparking at the commutator is very injurious, as it results in burnt commutators. Furthermore, sparking at the commutator is frequently the sign that something else is seriously wrong with the motor or generator; when a motor is seen to be sparking badly, shut it down if you are authorized to do so, and whether shut down or not be sure to notify an officer, or a responsible petty officer of the electrical division. The bearings of motors sometimes get hot and smoke, and even the wires in the motor may do so. A prompt report and the shutting down of the motor may save it from very serious injury.

A generator may be running and produce an electromotive force just like the primary cell does, but in each case no current flows until a wire is connected across the terminals. In the case of the generator, the wires are led out to the switchboard, but no current can flow until one of the switches is closed to connect the generator with an outside circuit—for instance, the wardroom lighting circuit. When current does flow the throttle on the engine opens up a little and the engine gets more steam to pull the additional load of the lighting circuit. An engine requires five times as much steam to pull a generator at full load as it does to pull it with no load (no current flowing in any outside circuit). This is the reason that a heavy load should not be thrown on a generator without notifying the dynamo room. If a searchlight or turret training motor is started without warning, the steam pressure may go down so that the dynamo engine can not get enough steam to turn the generator, and all the lights will go dim and the motors slow down or stop; or the dynamo engine may get enough steam and the current from the generator become so great that there is dan-

er of burning up the generator itself—then the main circuit breaker will automatically disconnect the generator from all its outside circuits, putting out all the lights and stopping all the motors on the ship. Never throw a heavy load on a generator until the dynamo watch has been notified and is ready to handle it.

The generators (called alternators) and motors which are used to propel ships are different from most of those in the Navy; they use alternating current. Direct current flows through the wiring always in the same direction, and direct-current generators and motors which are in common use are much alike. In fact, some kinds are exactly alike and can be used either as generators or as motors. A submarine has two Diesel engines and two motors; when the boat is on the surface the engines may run the main motors as generators and all the current generated is used to charge the storage battery. When the boat dives, the engines are shut down, and current from the storage batteries moves the main motors which propel the ship under water.

Suppose a 5-horsepower blower motor is running all night and the electrician at the switchboard pulls out the switch and stops the supply of current. If no changes are made at the starting box of the motor, when the electrician again throws in the switch the starting current through the motor will be many times as large as it is when the motor is up to speed; in fact, the starting current would be more than the motor could stand even for an instant, and some of the wiring on the motor would melt. Motors are protected against this large starting current by fuses, or circuit breakers, which will be described later, and also by starting panels or controllers. Starting panels and controllers

hold the current to the motor down while starting, just like a throttle of an engine acts. The handle of the starting panel should be in the stop position before the switches and circuit breakers are closed, then, beginning at the lowest speed, the controller or starting arm should be put over notch by notch until the desired speed is obtained. Some motors are intended to run on any notch of the controller, for example, winch, turret-rammer, and crane motors; others, like blowers, should run but a few seconds on any of the low speed notches. Furthermore, these motors are controlled by starting panels, and when the current is switched off the starting arm moves back to the stop position by the action of a spring. This protects them from burning out if the current is switched on again.

An electric current always produces some heat in an object through which it flows. The more current flowing through the object, the hotter it becomes. Thus an electric fan may be running for hours and still be just warm to the hand, but if one stops it by putting a stick in the blades, the current flowing through the motor greatly increases and the motor gets so hot that the rubber burns off the wires and even the wires get red hot and finally melt.

A compartment lighted with eight 60-watt lights requires about 4 amperes of current to light them. The wires and sockets of such a lighting circuit would be made big enough to stand considerably more current, say, 10 amperes, without injury. In the circuit, however, one could replace a piece of the regular wire with lead wire of such a size that 5 amperes of current would melt it. Then if some one removed one of the lights and plugged in an electric heater the current would go up to over 5 amperes and the lead wire would

melt before damage had been done to the rest of the circuit. Lead wire used in this way is called a fuse; fuses are easy to replace and cheap and they protect the rest of the apparatus. Fuses are made of lead and other cheap metals and mixtures of them; they are often inclosed in glass tubes for convenience and safety.

Of course, if one put in a 100-ampere fuse in place of the 5-ampere one, the whole circuit would be ruined the next time the circuit was overloaded. Fuses are of different sizes, and all important circuits are protected by them if a fuse of the proper size is in place, but not if a large fuse has been installed.

The most important circuits are also protected by circuit breakers—they are switches operated automatically by electromagnets. The electromagnets are installed in the circuit so that all the current in the circuit goes through the electromagnets; then if the current becomes too great the electromagnet trips the catch and the circuit breaker springs open.

It is of the greatest importance to understand that if fuses keep blowing on a circuit, or the circuit breaker will not stay closed, there is something the matter that must be fixed to avoid serious injury to the apparatus. The man who puts in a larger fuse, the one who holds the circuit breaker in, and the one who screws down a boiler safety valve are all in the same class.

Two wires lead to every machine and fixture on the ship, a positive and a negative wire. Current is generally supposed to flow through the fixture or machine from positive to negative. The wires are made of copper of low resistance, therefore if through carelessness or accident some metallic connection is made from one wire to the other, a very heavy current flows

through this accidental connection. This is called short circuit; the result is a fuse or circuit breaker blown out or wiring overheated and burned.

If the negative wire is accidentally connected to the metal of the ship no harm is done at once, but the connection is called a ground. However, if the positive wire also has a ground, or gets grounded, a current flows through the metal of the ship from the positive ground to the negative ground. A large part of the electrician's work consists in finding and removing the grounds; perhaps it is a telephone circuit and the ground consists only of a little verdigris—yet it will make the telephones so scratchy and noisy they cannot be used. On thermostat and call-bell circuits a very small ground will make the annunciator show trouble all the time so that one can not tell who rings a call bell. It can not be too strongly impressed upon you that the efficiency of some of the most important apparatus on the ship depends on keeping electric contacts dry and free from verdigris, which can be accomplished by the seamen if they will put caps on the plug receptacles of lights, buzzers, and telephones.

There are two other sources of current or spare power about which the seaman should know. The first is the storage battery. It is generally larger than the primary cells already described, but on discharge it acts in much the same way. But none of the materials of the cell are destroyed on discharge, and it may be recharged to its charged condition ready for use another time by charging it with current from the generator (or motor generators) of the ship. A storage battery should never be completely discharged. When it begins to be low, call an electrician to see if it needs charging. Do not spill the acid out of the battery; it destroys wood, paint, clothes, or metals. Do not

salt water enter the battery; a poisonous yellow gas is given off and the battery is ruined. A full charged battery will not freeze in zero weather, but a run-down battery might. Above all else, do not let a run-down battery remain in discharged condition for any length of time; it must be charged immediately to avoid injury.

Certain liquids flowing through pipes can produce charges of electricity in the pipe and tanks. Gasoline particularly acts this way. A 50-gallon drum of gasoline sitting on a wooden deck, running gasoline through a metal hose into a boat tank, is almost sure to produce electricity. If the nozzle of the hose does not touch the boat tank, there will be a charge of electricity in the drum and an opposite charge in the boat tank, and these two charges tend to equalize each other by means of a spark between the two. A spark from the end of the hose to the boat tank is probable. A spark at this point may cause an explosion, and a great many disastrous fires and explosions have occurred in this way. Straining gasoline through chamois is even more dangerous. For these reasons the use of chamois for straining gasoline is forbidden, and the hose nozzle for filling gasoline tanks must first make contact with the boat tank at a place far from the filling hole, and then while filling, the hose and the tank must be kept connected with each other by a chain or similar means.

While on the subject of sparks, attention must be called to the fact that a spark occurs at the switch every time a light is switched off, or at the break every time a wire carrying current is broken. Gasoline vapor in the bilges of boats has been ignited in this way; also hydrogen gas from storage batteries which were being charged. Don't move a switch or break a wire carrying current where there is anything explosive.

Water causes more electrical failures on board ship than anything else. All important wiring on board is made water-tight, but the places to plug in on them have screw caps. Don't leave the caps and covers where things ought to be water-tight. Battle light portables, telephones, and buzzers all plug into water-tight receptacles, which will surely give trouble and require laborious repairs if the screw caps are left off when the receptacle is not in use. If a careless man puts paint on the threads of the receptacle it is not possible to screw on the cap; paint on the rubber gasket used in making the receptacles water-tight makes them gummy, sticky, and rotten. Many electric lights are covered with steam-tight globes and guards. Don't take them off and lose them. Effort is made to make telephone receivers and transmitters water-tight; when water gets inside the verdigris causes telephones to be noisy and scratchy so they are almost useless. Telephones and buzzers are delicate and easy to break, and they must have good care. To put the matter plainly, there are so many electric fixtures and so much portable apparatus in use on board ship that upkeep and repair of it all is a big job; if all hands do their part to protect the apparatus, the electrical gang can repair such pieces as do give trouble, but if all hands are slovenly and careless about electrical equipment, the electrical gang can not possibly keep up with the work. It is usually the fault of all hands when the electrical gang complain about not having time to rig band lights or lights for smokers. More important than this, however, is the fact that misfires, failures of fire-control telephones and buzzers, and of signal lights at critical times, are often due to carelessness about the simple precautions mentioned herein. A ship can not be a winner if the electrical fittings are allowed to run down.

CHAPTER 39

CARRYING THE AUTOMATIC RIFLE

SCHOOL OF THE RECRUIT; MANUAL OF ARMS

These subjects are taken up in Part I, chapters 6 and 7, pages 57 and 65. All men should refresh their minds on these movements and review the above chapters.

RULES GOVERNING CARRYING OF THE BROWNING AUTOMATIC RIFLE

(a) At the command **Fall in**, automatic rifles are slung over the right shoulder, butt down, barrel to the rear.

(b) For ceremonies and drill, the automatic rifle is carried slung over the right shoulder, butt down, barrel to the rear.

(c) For marches and open-order drills, the automatic rifle may be carried slung over either shoulder.

(d) When the men are brought to attention, the automatic rifle is slung over the right shoulder as explained for ceremonies and drills. It is carried slung until the command **Rest** is given, unless otherwise ordered. It is carried slung when the men are at ease, unless otherwise ordered. Automatic riflemen assume the position of at ease or stand at ease as without arms. If the automatic rifle is ordered unslung, the

position of at ease or stand at ease is taken as prescribed for troops armed with the rifle.

(e) At the command **Rest** automatic rifles are unslung



FIG. 183a.—Position of automatic rifle slung over right shoulder, front view



FIG. 183b.—Position of automatic rifle slung over right shoulder, side view

(f) The automatic rifleman does not execute the manual of arms except as follows:

(1) 1. **Parade**, 2. **REST**. Automatic rifle remains slung and man takes position of **Parade rest** as without arms.

(2) 1. **Inspection**, 2. **ARMS**. At the command **Arms**, grasp the magazine with the left hand, at the same time pressing the magazine release with the right hand. Withdraw the magazine with the left hand and place in belt. Pull back the operating handle with the left hand.



FIG. 183c.—Position
rest



FIG. 183d.—Parade
rest

(3) Being at inspection arms: 1. **Order** (Port, right shoulder), 2. **ARMS**. At the command **Order**, pull the trigger, replace the magazine, and resume the position of attention, the automatic rifle being kept slung.

(g) When arms are stacked, the automatic rifle is placed on the stack as prescribed for a loose piece.

(h) The automatic rifle belt is worn whenever the automatic rifle is carried.

(i) The salute.—When the automatic rifle is unslung the salute is executed as with the rifle. When the auto



FIG. 183e.—Inspection arms—without magazine



FIG. 183f.—Inspection arms—pull back operating lever



FIG. 183g.—Inspection arms—pull trigger—replace magazine

matic rifle is carried slung, the hand salute is executed. The landing force, including the knapsack, is taken up in Part VI, page 889.

CHAPTER 40

ARTILLERY—GENERAL RULES; HOW TO SLING AND UNSLING ARMS

ARTILLERY

The field artillery of a naval force is composed of platoons, companies, battalions, and regiments.

The platoon consists of the piece, limber, equipment, gun squad, and dragmen.

The company consists of from 2 to 4 platoons; it contains the number of platoons assigned to the organization's normal infantry company and constitutes the artillery force of a vessel of the first class.

In general, the battalion is composed of the artillery companies of a division of the fleet, or of several vessels, as ordered by the senior officer present. The regiment is correspondingly composed of the artillery battalion of two or more divisions.

When the drag is manned, the platoon is the smallest unit; but when cleared for action the platoon divides into the gun fully manned and the dragmen. Artillery, when cleared for action, is said to be in battery. The guns of the artillery company together form the firing battery, and the combined dragmen form the supports.

GENERAL RULES

(1) When not engaged in the service of the piece or as dragmen, the personnel is handled in the same manner as any similar body of infantry.

(2) When the drags are manned, artillery units are maneuvered exactly like corresponding infantry units and by the same commands, except that the platoon is the smallest unit.

(3) The front, when the drag is manned, is in the direction in which the trail points; when in battery, it is the direction in which the muzzle points. The terms "right," "left," and "rear" are to designate the direction of the enemy.

(4) The dress, when the drag is manned, is on the drag leaders; when in battery, it is on the axles of the pieces.

(5) In simultaneous or successive movements, alignments are preserved according to the rules for infantry.

ARTILLERY PLATOON

An artillery platoon consists normally of a PT. C and two 1 P. OS., a gun squad, and three squads of dragmen; but the number of dragmen may be increased or decreased, depending on circumstances. The members of the gun squad are assigned, for convenience of designation, numbers from 1 to 8, the front-rank men being 1 to 4, respectively, and the rear-rank men 5 to 8, respectively. No 4 is habitually squad leader and gun pointer.

The platoon has three formations, namely: (1) Platoon to the front, (2) at the drag, and (3) in battery.

FORMATION PLATOON TO THE FRONT

The formation of a platoon of infantry, gun squad on the left is shown in Figure 184. Pieces are at the order unless otherwise directed.

FORMATION AT THE DRAG

The drag consists of a span and cross bar $3\frac{1}{2}$ feet long, with two drag ropes. Each drag rope is fitted with 4 or 6 toggles, 5 feet apart, and may be lengthened by fitting extension pieces, with toggles, or shortened by stopping back one or two toggles. The span and each drag rope are fitted with snap hooks, which hook into appropriate thimbles, so that, if desired, either drag rope may be used alone, without the span, or both combined to make a single drag of double lengths.



FIG. 184.—Platoon to the front

The double drag is the normal formation. The front rank mans the left drag rope, rear rank the right drag rope; even numbers on the left of the drag, odd numbers on the right; each squad intact.

Stations of individuals are shown in Figure 185. The senior P. O. is abreast of the drag leaders, the junior 1 P. O. is 2 paces in rear of the piece. The Pt. C. is on the left of the platoon guide.

Pieces for all P. OS. and men are carried at the diagonal sling; but dragmen may be directed to carry the piece in the free hand, or at the right or left shoulder, accordingly as they are on the right or left of the drag.

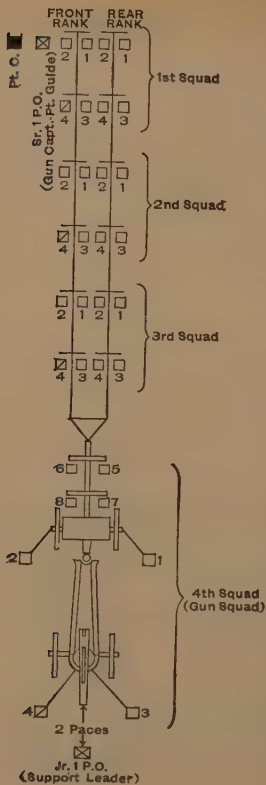


FIG. 185.—At the drag

Without limber: Modifications—Nos. 1 and 2 man the guide ropes at the trail of the piece; 5, 6, 7, 8 man the rear toggles at the drag, in order from right to left.

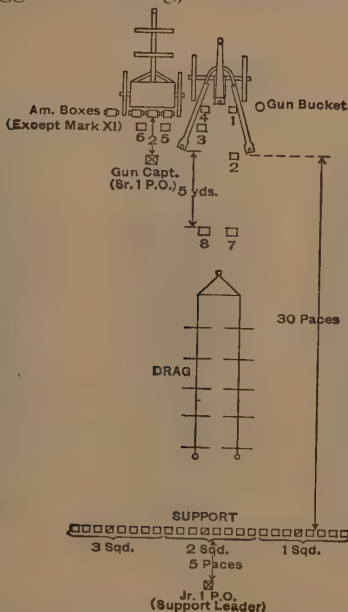


FIG. 186.—In battery

THE FORMATION "IN BATTERY"

Figure 186 shows the stations of all individuals at In battery.

HOW TO SLING AND UNSLING ARMS

The rifle being in any position, 1. Sling, 2. ARM. At the second command, prepare the strap (fig. 187a); raise the piece with the right hand, insert the thumb through the strap (fig. 187b), and shift the right hand to the small of the stock; then, raising the



FIG. 187a.—Prepare the strap



FIG. 187b.—Raise the piece



FIG. 187c.—Insert the head

rifle, insert the head and arms through the strap, and allow the piece to hang diagonally across the back muzzle up and to the left, strap over the left shoulder (fig. 187d).

When slung in this manner, men on the left of the dragrope steady the piece with the left hand by means

of the strap (fig. 187e); men on the right of the drag-rope, with the right hand, at the butt (fig. 187f).

When packs are worn the rifle may be slung vertically, the strap resting on the shoulder away from the dragrope.



FIG. 187d.—Sling arms



FIG. 187e.—Steadying piece



FIG. 187f.—Steadying piece

TO UNSLING ARMS

Arms being slung: 1. Order (right shoulder, etc.), 2. ARMS. At the second command, unsling arms and take the position directed.

CHAPTER 41

SMALL ARMS

THE UNITED STATES MAGAZINE RIFLE, MODEL OF 1903

Most of the operating parts of the rifle may be included under "Bolt mechanism" and "Magazine mechanism."

BOLT MECHANISM

(1) The bolt mechanism consists of the bolt, sleeve, sleeve lock, extractor, extractor collar, cocking piece, safety lock, firing pin, firing-pin sleeve, striker, and main spring.

(2) The bolt moves backward and forward and rotates in the well of the receiver; it carries a cartridge, either from the magazine or one placed by hand in front of it, into the chamber, and supports its head when fired.

(3) The sleeve unites the parts of the bolt mechanism, and its rotation with the bolt is prevented by the lugs on its sides coming in contact with the receiver.

(4) The hook of the extractor engages in the groove of the cartridge case and retains the head of the latter in the countersink of the bolt until the case is ejected.

(5) The safety lock when turned to the left is inoperative; when turned to the right—which can only be done when the piece is cocked—the point of the spindle enters its notch in the bolt and locks the bolt; at the same time its cam forces the cocking piece slightly to

the rear, out of contact with the sear, and locks the firing pin.

MAGAZINE MECHANISM

The magazine mechanism includes the floor-plate for lower, magazine spring, and cut-off.

(1) To charge the magazine, see that the cut-off is turned up showing "on," draw the bolt fully to the

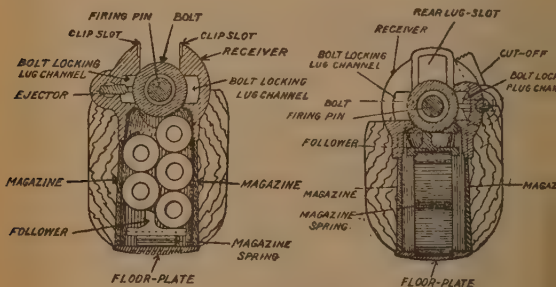


FIG. 189.—Cross section of rifle

rear, insert the cartridges from a "clip" or from the hand, and close the bolt. To charge the magazine from a clip, place either end of a loading clip in its seat in the receiver and, with the thumb of the right hand, press the cartridge down into the magazine until the top cartridge is caught by the right edge of the receiver. The manner in which the cartridges arrange themselves in the magazine and the position of the follower and compressed magazine spring are shown in Figure 189. The cartridge ramp guides the bullet and cartridge case into the chamber. The magazine can be

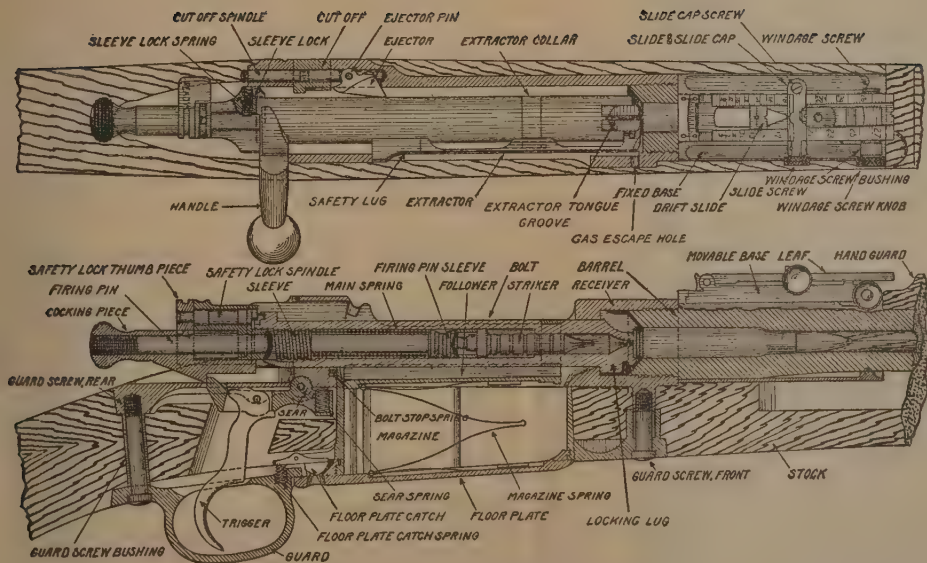


FIG. 188.—Top and longitudinal section of rifle

filled, if partly filled, by inserting cartridges one by one.

(2) Pushing the bolt forward, after charging the magazine, ejects the clip.

THE CUT-OFF

(1) When the cut-off is turned down, the magazine is "off." The bolt can not be drawn fully back, and its front end projecting over the rear end of the upper cartridge holds it down in the magazine below the action of the bolt. The magazine mechanism then remains inoperative, and the rifle can be used as a single loader, the cartridges in the magazine being held in reserve. The rifle can readily be used as a single loader with the magazine empty.

(2) When the cut-off is turned up, the magazine is "on," the bolt can be drawn fully to the rear, permitting the top cartridge to rise high enough to be caught by the bolt in its forward movement. As the bolt is closed, this cartridge is pushed forward into the chamber, being held up during its passage by the pressure of those below. The last one in the magazine is held up by the follower, the rib of which directs it into the chamber.

In magazine fire, after the last cartridge has been fired and the bolt drawn fully to the rear, the follower rises and holds the bolt open to show that the magazine is empty.

PRECAUTIONS

(1) If it is desired to carry the piece cocked, with a cartridge in the chamber, the bolt mechanism should be secured by turning the safety lock to the right. Under

no circumstances should the firing pin be let down by hand on a cartridge in the chamber.

(2) To obtain positive ejection, and to insure the bolt catching the top cartridge in magazine, when loading from the magazine, the bolt must be drawn fully to the rear in opening it.

(3) When the bolt is closed, or slightly forward, the cut-off may be turned up or down as desired. When the bolt is in its rearmost position, to pass from loading from the magazine to single loading it is necessary to force the top cartridge or follower below the reach of the bolt, to push the bolt slightly forward, and to turn the cut-off down, showing "off."

(4) In case of a misfire it is unsafe to draw back the bolt immediately, as it may cause a hang fire. In such cases the piece should be cocked by drawing back the cocking piece.

(5) It is essential for the proper working and preservation of all cams that they be kept lubricated.

DISMOUNTING AND ASSEMBLING

The bolt and magazine mechanism can be dismantled without removing the stock. The latter should never be done except for making repairs, and then only by some selected and instructed man.

TO DISMOUNT BOLT MECHANISM

(1) Place the cut-off at the center notch; cock the arm and turn the safety lock to a vertical position, raise the bolt handle, and draw out the bolt.

(2) Hold bolt in left hand, press sleeve lock in with thumb of right hand to unlock sleeve from bolt, and unscrew by turning to the left.

(3) Hold sleeve between forefinger and thumb of the left hand, draw cocking piece back with middle finger and thumb of right hand, turn safety lock down to the left with the forefinger of the right hand in order to allow the cocking piece to move forward in sleeve, thus partially relieving the tension of mainspring. With the cocking piece against the breast, draw back the firing-pin sleeve with the forefinger and

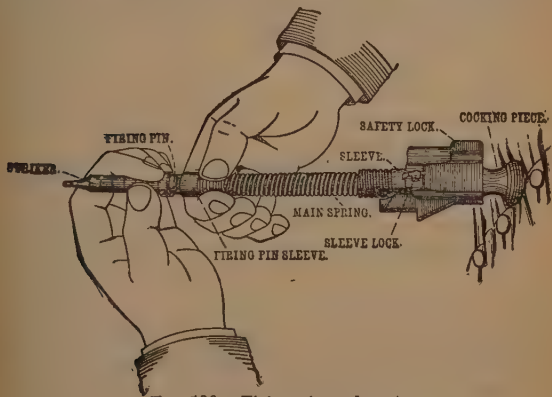


FIG. 190.—Firing pin and parts

thumb of right hand and hold it in this position while removing the striker with the left hand. Remove firing-pin sleeve and mainspring; pull firing pin out of sleeve; turn safety lock thumb piece to the right on sleeve and draw it to the rear through the groove made in sleeve for this purpose. Turn the extractor to the right, forcing its tongue out of its groove in the front of the bolt, and force the extractor forward and off the bolt. See Figure 190.

TO ASSEMBLE BOLT MECHANISM

(1) Grasp with the left hand the rear of the bolt handle up, and turn the extractor collar with the thumb and forefinger of the right hand until its lug is on the line with the safety lug on the collar in the undercut in the extractor by pushing the extractor to the rear until its tongue comes in contact with the rim on the face of the bolt (a slight pressure with the left thumb on the top of the rear part of the extractor assists in

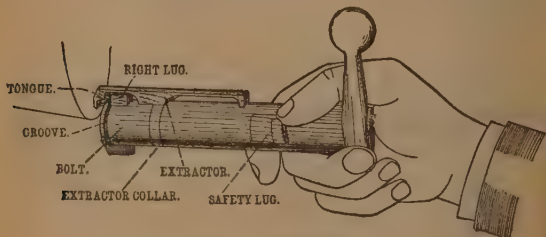


FIG. 191.—Rifle bolts

this operation); turn the extractor to the right until it is over the right lug; take the bolt in the right hand and press the hook of the extractor against the butt plate, or some rigid object, until the tongue on the extractor enters its groove in the bolt. (See fig. 191.)

(2) Place the safety lock, through the dismounting groove, into position on the sleeve and turn it down to the left so as to permit the firing pin to enter the sleeve as far as possible; place the cocking piece against the breast and put on mainspring, firing-pin sleeve, and strike. Holding the cocking piece between the thumb and forefinger of the left hand, draw the cocking piece

back with the thumb and middle finger of the right hand, and turn the safety lock to a vertical position with the forefingers of the right hand; insert the firing pin in the bolt and screw up the sleeve (by turning it to the right) until the sleeve lock enters its notch on the bolt.

(3) See that the cut-off is at the center notch; hold the piece under floor plate in the fingers of the left hand, the thumb extending over the left side of the receiver; take bolt in right hand with safety lock in a vertical position and safety lug up; press rear end of follower down with left thumb and push bolt into the receiver; lower bolt handle; turn safety lock and cut-off down to the left with right hand.

TO DISMOUNT MAGAZINE MECHANISM

(1) With the bullet end of a cartridge, press on the floor plate catch (through the hole in the floor plate), at the same time drawing the bullet to the rear; this releases the floor plate.

(2) Raise the rear end of the first limb of the magazine spring high enough to clear the lug on the floor plate and draw it out of its mortise; proceed in the same manner to remove the follower.

(3) To assemble magazine spring and follower to floor plate, reverse operation of dismounting.

(4) Insert the follower and magazine spring in the magazine, place the tenon on the front end of the floor plate in its recess in the magazine, then place the lug on the rear end of the floor plate in its slot in the guard, and press the rear end of the floor plate forward and inward at the same time, forcing the floor plate into its seat in the guard.

OPERATION OF THE RIFLE

Unless the bolt is drawn fully back the ejector will fail to work, and in magazine fire it will cause a jam.

When a misfire occurs, press the bolt handle well down, pull the cocking piece to the rear, and try again. Unless the bolt handle is fully down the firing pin does not strike with full force. Almost all misfires are due to faulty operation of the bolt.

See that the guard screws are kept tight. Loose guard screws not only prevent good shooting, but also interfere with the proper feeding of cartridges from the magazine, often resulting in a jam.

For practicing the motions of rapid fire with the rifle unloaded, turn the cut-off down or "off"; otherwise the bolt can not be worked back and forth.

CLEANING THE RIFLE

The rifle is a weapon of precision, and demands proper care and cleaning. A lack of care soon ruins its accuracy.

After a day's shooting the bore demands special attention, as the residuum from smokeless powder soon corrodes it, and should be removed as soon as practicable.

There are three kinds of fouling:

(1) A black deposit, easily removed by oily rags.

(2) An acid deposit or gas, coming from the primer and forced into the texture of the steel, which gradually comes out, and, unless removed, causes rust. It can be best taken out by fresh water through the use of a bristle brush. Cleaning must be repeated daily for several days.

(3) Metal fouling, caused by particles of the cupronickel jacket of the bullet adhering to the bore. This rarely happens with the present ammunition, and its removal is usually not only impracticable in the field, but unless done by an experienced man may cause serious damage to the bore.

To clean the rifle.—(1) Remove the bolt and clean from the breech end. Never clean from the muzzle.

(2) Use a cleaning rod and small piece of cloth about $1\frac{1}{2}$ inches square, then lightly oil the bore by using an oiled rag. The metal and working parts are also cleaned by using dry rags, and then oiling with a slightly oiled rag to prevent rusting and to lubricate working parts.

(3) Only this small amount of light oil should be used, because any surplus oil makes the rifle disagreeable to handle, collects dirt and grit, finds its way into and around the bolt mechanism, and often flies back into the firer's face and eyes when he fires. The bolt handle should be dry and entirely free from oil, otherwise it is difficult to grasp the bolt firmly to operate it.

(4) If available, a saturated solution of soda and water may be used to clean the bore, thoroughly drying the bore with dry patches of cloth before oiling. Or the following mixture may be used: Amyl acetate, 2 parts; acetone, 2 parts; gas-engine oil, 1 part. Dissolve the oil in the acetate and add the acetone.

(5) Whatever the method of cleaning, the bore should be cleaned daily for several days.

(6) Cosmoline, machine oil, or any other oil which will not rust the metal is suitable for oiling rifles. Sperm oil is the best for lubricating metallic bearing and contact surfaces; a somewhat heavier oil for the bore. Never use emery or any other material which will scratch the metal.

(7) The stock and hand guard may be coated with raw linseed oil and polished by rubbing with the hand.

AIMING

There are several different open-sight notches on the rear sight, but the peep sight is recommended for all firing.

In aiming, the eye should be held as close as possible to the peep; that is, almost up to the comb of the firing pin. Then aim at the point it is desired to hit, keeping the top of the front sight centered in the peephole, as

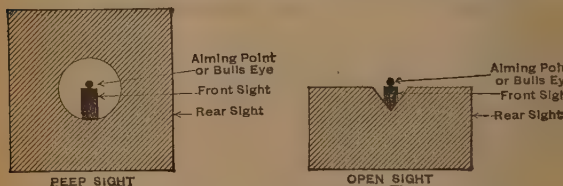


FIG. 192.—Peep and open sights

shown in Figure 192. But when the target (or bull's-eye) appears ill-defined, or so small as to be covered by the front sight, aim should be taken at the lower edge of the target or bull's-eye, since an exact aim is very difficult to maintain when the target is even temporarily obscured by the sights.

With any open sight always aim so that the front sight is centered in the rear-sight notch, and just "fills" the notch; i. e., is just even with the top of the rear-sight notch, as shown in Figure 192. Then aim at the point it is desired to hit, or, if the target is small, let it rest on top of the front sight, in the manner explained for the peep sight. (See fig. 192.)

The battle sight (open sight with sight leaf down) is the only kind of open sight which, because of sudden and unexpected emergency in the field, may have to be used. The battle sight is ranged for 530 yards, and consequently shoots high at all ranges within this distance. Hence with this sight aim about 1 foot below the object at 200 and 400 yards, and 2 feet below at 300 yards; otherwise the shot will be high.

In firing at living targets, except at very short ranges, aim should be taken at the bottom of the target. Thus in aiming at a man at long range, at least half of the body of the man (if standing) should be seen resting on the front sight, or all if he is prone.

In firing at moving targets it will be necessary to lead the target in order to make a hit, as otherwise the shot will fall behind.

The following table shows the approximate distance necessary to aim ahead of the body of a man or horse moving across the range at various distances and various rates of speed:

Distance (yards)	Man walking	Man double-timing	Horse walking	Horse trotting	Horse running
	<i>Feet</i> (¹)	<i>Feet</i>	<i>Feet</i> (²)	<i>Feet</i> (²)	<i>Feet</i> (²)
100.....	0.7	0.5	(²)	(²)	1.3
200.....	1.5	1.7	(²)	(²)	3.8
300.....	2.0	3.0	(²)	1.5	6.5
400.....	3.0	4.4	(²)	3.3	9.5
500.....	4.0	6.0	1.0	5.3	13.0
600.....		7.5	2.0	7.5	

¹ Front edge.

² Front edge of body.

If the sights are bright there will be a glimmer about them which interferes with accurate aiming. They should be a dead black. The sights are blackened by smoking them. A candle is the best thing; a match

will do. Oiled rags which have been used to clean rifles make excellent smoke for blackening sights. Blacken both the front and rear sights. The black will not take on greasy metal.

SIGHT SETTING

The marks opposite the peep indicate where the sight is to be set. The numbers on the sight leaf refer to the marks below the numbers; for example, the figure 6 is above the 600-yard mark. Changes in elevation of 25, 50, and 75 yards have to be made, and when there are no marks for these settings they have to be estimated, and with great care, for a slight inaccuracy makes a big difference in the point of hit.

The marks on the wind gauge are called points, and changes in windage of quarter points may have to be made.

The bullet is carried in the same direction that the sights are moved; for example, if shots strike above and to the right of the bull's-eye the elevation should be lowered and the windage set to the left. Winds carry the bullet to the right or left with the wind, therefore the windage is set to windward.

The elevation is not always set at exactly the actual range at which the firing takes place. With some rifles the elevation is set above the range, and with others below it, and all rifles are not exactly true for windage.

To learn sight setting it is not sufficient to read about it. It must be practiced.

HOLDING THE RIFLE

THE SLING

The gun sling is of great assistance in shooting. It helps to steady the rifle, presses the butt of the rifle

against the shoulder with the same amount of force for each shot, and reduces the recoil.

There are two authorized methods of adjusting the sling—the loop adjustment and the hasty sling adjustment. The hasty sling is more rapidly adjusted than the loop sling, but it gives less support in positions other than the standing position. In range firing the loop sling will be used at all ranges except 200 yards standing. The hasty sling will be used on the range in the standing position at 200 yards. All men will be required to use one or the other form of gun-sling



FIG. 193.—Loop adjustment of sling



FIG. 194.—Hasty sling adjustment

adjustment when firing or simulating fire in all problems and maneuvers.

(1) The loop adjustment.

(a) Loosen lower loop.

(b) Put left arm through upper loop from right to left, so that the upper loop is near the shoulder and well above the biceps muscle.

(c) Pull leather keeper down so that it will hold the upper loop in place.

(d) Move the left hand over the top of the gun sling and grasp the rifle near the lower band swivel so as to cause the sling to be smooth along the hand and wrist.

(e) Lower loop, not used in this adjustment, will be so loose as to prevent any pull upon it.

(2) The hasty sling adjustment.

(a) Loosen the lower loop.

(b) Grasp the rifle just in rear of the lower band swivel with the left hand and grasp the small of the stock with the right hand.

(c) Throw the sling to the left and catch it about the elbow and high on the arm.

(d) Remove the left hand from the rifle, pass the left hand under the sling, then over the sling, and regrab the rifle with the left hand so as to cause the sling to be along the hand and wrist.

The sling may be given one-half turn to the left and then adjusted. This twisting causes the sling to be smooth along the hand and wrist.

THE STANDING POSITION

According to the latest practice the firer stands half-faced to the right; feet from 1 foot to 2 feet apart; body erect and well balanced; left elbow well under the rifle; left hand grasping the piece in front of the balance, rifle resting on the palm of the left hand, which grasps the piece in front of the balance butt of the piece high up on the shoulder and firmly held, right elbow approximately at the height of the shoulder; cheek pressed against the stock and placed as far forward as possible without strain. (Fig. 195) A position with the left hand against or under the trigger guard and with the left arm supported against the body is not a practical field position and is prohibited in national matches.

There are, however, various ways of holding in the standing position. The left hand may be drawn back from the lower band swivel to near the trigger guard

The left arm should rest against the body. The standing position is the most unsteady position, and much practice with the rifle unloaded is necessary to cultivate steadiness. Do not be afraid in this position to press the jaw hard against the stock. The head then goes back with the recoil and the face is not hurt. Do not try to meet or resist the recoil. Let the body yield to it.



FIG. 195.—Approved standing position

Some men may find they can hold the rifle more steady in the standing position, especially at rapid fire, by throwing practically the entire weight of the body on the left leg, keeping the left knee straight and throwing the left hip out in the direction of the line of fire. The right knee is slightly bent, the right leg merely serving to steady the body. With the body in

this position better support is afforded the left elbow and arm, which should be held close. The right elbow should be held level with the line of sight. Instead of using the loop of the sling around the arm as in all other positions, the hasty sling should be used.

THE SQUATTING POSITION

Both feet are flat on the ground and the buttocks clear of the ground. Bend the knees and lower the



FIG. 196.—Squatting position

body, resting both elbows on the knees, the points of the elbows over the knees. This position is comfortable, steady, and quickly taken. (See fig. 196.)

THE KNEELING POSITION

The right knee points directly to the right; that is, along the firing line. The point of the left elbow is over the knee. There is a flat place under the elbow which fits the flat place on the knee and makes a solid rest. Lean the body well forward. After practice



FIG. 197a.—Kneeling position

the position ceases to be uncomfortable. (See figs. 197a and 197b.)

THE SITTING POSITION

The sitting position is useful in outpost service. There are several varieties of the sitting position; every man must find the one which fits him best. In-



FIG. 197b.—Kneeling position, sitting on right foot



FIG. 198.—Approved sitting position

experienced men sometimes find difficulty in adjusting themselves to this position, but with practice it becomes comfortable and steady. The legs must be at rest and the leg muscles not strained when aiming. Lean the body well forward and find a steady rest of the knees for both elbows. (See fig. 199.)

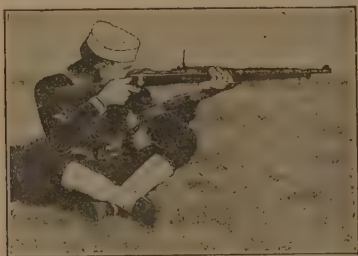


FIG. 199.—Sitting position, legs crossed

THE PRONE POSITION

Lie flat down at an angle of about 45° to the firing line, spread the legs wide apart, and turn the heels in-board. Flatten the middle part close to the ground. Place the point of the left elbow to the front, and well to the right, then raise the right shoulder and, placing the right hand on the butt plate, put the butt of the rifle against the shoulder, and flatten out again. Put the cheek or jaw hard against the small of the stock, the thumb of the right hand along and across the stock, and the right eye up to the firing pin, as close to the peep sight as possible. Let the right elbow spread out, and, drawing the body back, get the chest and the whole body as flat on the ground as possible. The left elbow must be directly under the rifle. The right elbow is moved out to raise and in to lower the muzzle. Now the rifle can not kick. The only recoil will be of the whole body, which will not be felt. (See figs. 200 and 201.)

ARTIFICIAL RESTS

The use of artificial rests aids in holding. In the standing position, a tree or post may be used. Shoot from the right of the post, resting either the rifle or arm against the post. In firing from behind a parapet, any of the positions may be used, depending on the height of parapet. (See figs. 202, 203, and 204.)

GENERAL PRINCIPLES FOR FIRING IN ALL POSITIONS

Press the cheek hard against the stock.

Thumb is along, and not across, the stock.

Never cant the rifle. Keep it plumb. If it is canted the least bit the bullet will strike in the direction of the cant.



Fig. 200.—Placing butt of rifle on right shoulder



Fig. 201.—Prone position



FIG. 202.—Kneeling behind parapet



FIG. 203.—Sitting behind parapet

Breathe out naturally and then do not breathe while aiming.

If you aim too long you will become unsteady and your eyesight will get bad. Take the rifle from the shoulder, rest, and aim again.

Squeeze the trigger.—There is a little slack in the trigger. When aiming take this up with the finger so that when you wish to fire you have only to increase the pressure of the finger.



FIG. 204.—Using post rest

Before firing, cock the rifle, and with the rifle unloaded squeeze the trigger. This will steady you down and get you better acquainted with your trigger pull.

Do not yank or pull the trigger; squeeze gently the whole small of the stock with the right hand. Let the trigger off as easy as you can, and keep up the aiming while the gun is being discharged, then you can tell where you were aiming when the bullet leaves the rifle.

Call the shot.—As soon as you have squeezed the trigger, and before the target is marked, "call the shot"; that is, call out loud where you were aiming when the rifle was fired.

A man who intends to call the shot will not shut his eyes when he squeezes the trigger; he will not quit aiming while he is squeezing the trigger. He will not flinch. Calling the shot is the best cure for flinching. Make up your mind to continue aiming while the piece is being fired. Calling the shot will help you.

In rapid fire keep the butt to the shoulder.—To load, lower the muzzle to the right and work the bolt, being careful to draw it fully back, so it will eject the empty shell and not cause a jam. It will become easy after practice.

In reloading prone, with the rifle resting on a parapet and without removing the butt from the shoulder raise the right elbow well above the ground. It requires practice to do this conveniently.

THE PISTOL

To thoroughly familiarize men with the mechanism of the pistol they should be required to dismount and assemble its parts under an instructor in the manner prescribed for the rifle. This may be done without tools.

To dismount.—Remove the magazine by pressing the magazine catch. Press the plug inward and turn the barrel bushing to the right until the plug and the end of the recoil spring protrude from their seat, releasing the tension of the spring. In carrying out this operation, the finger should be held over the plug to prevent it from jumping away; then remove the plug.

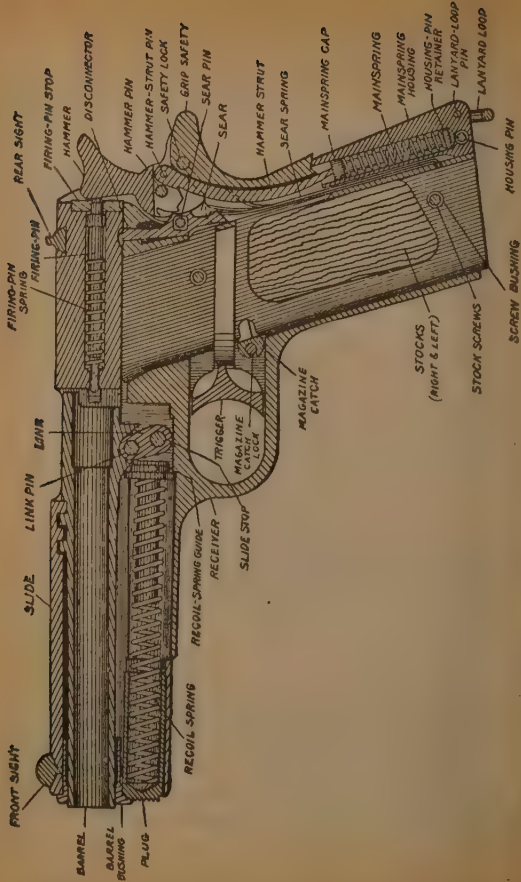


FIG. 205.—Cross section of pistol

Draw the slide rearward until the smaller rear recess in its lower left edge stands above the projection on the thumb piece of the slide stop; press gently against the end of the pin of the slide stop, which protrudes from the right side of the receiver above the trigger guard, and remove the slide stop. This releases the link, allowing the barrel, with link and slide, to be drawn forward together from the receiver, carrying with them the barrel bushing, recoil spring, and recoil-spring guide. Remove these parts from the slide by withdrawing the recoil-spring guide from the rear of the recoil spring; then draw the recoil spring forward from the slide.

Turn the barrel bushing to the left until it may be drawn forward from the slide; this releases the barrel, which, with the link, may also be drawn forward from the slide.

Partial dismounting of the pistol, as indicated in the preceding paragraphs, is all that is required ordinarily for proper care and cleaning. Only experienced men should be permitted to dismount other parts of the pistol.

To assemble.—Assemble the parts in the reverse order from that given for dismounting.

CARE AND HANDLING

When the slide is in its forward position and the hammer is full cocked, push the safety lock up to lock the hammer.

The grip safety at all times automatically locks the trigger unless it is pressed in by firmly grasping the handle as in the firing position.

When the slide is drawn fully back to its rear position, if the magazine is empty the slide stop auto-

matically locks the slide in its open position; if the magazine is not empty, and there is no jam, the slide when released will spring to its forward position unless it is locked by pressing the slide stop up into the recess on the slide.

When the pistol is fired and the slide remains open it indicates either that the magazine is empty or that there is a jam.

To relieve the jam it is often necessary to remove the magazine.

To remove the magazine, press the magazine catch

To load, charge the magazine with any number of cartridges from 1 to 7 (with 5 for a string in the Navy courses); insert the magazine into the hollow of the handle with a quick continuous movement until the click of the magazine catch is heard; then draw the slide fully back and release it, thus cocking the pistol and bringing the first cartridge into the chamber. The pistol is now ready for firing.

The magazine empty, the pistol can be used as single loader by drawing back the slide, inserting a cartridge in the chamber, and pressing down the slide stop to release the slide.

After the pistol is single loaded (and locked as a safety precaution), a filled magazine may be inserted. The pistol then carries eight cartridges ready for use.

It is dangerous, however, to carry the pistol thus loaded and, except in emergencies, the pistol should be carried with the chamber empty. When cartridges are in the magazine, to cock the pistol, load the chamber and prepare for firing it is only necessary to draw the slide fully to the rear and release it.

Pressure must be entirely released from the trigger after each shot in order that the trigger may reengage the sear.

To inspect the pistol to see that it is unloaded, or to unload it, draw the slide to the rear and release it as often as is necessary until it automatically remains in the open position. If loaded, each time the slide is drawn to the rear a cartridge will be ejected.



FIG. 206.—Aiming at the bottom edge of the bull's-eye. The point aimed at varies with the pistol and with the range

NOTES ON PISTOL SHOOTING

When a pistol is first taken in hand it should be examined to make sure that it is not loaded.

Both the front sight and the rear sight groove should be blackened. When the pistol is aimed the front sight should be seen through the middle of the rear sight

groove and the top of the front sight should be flush with the top of the groove. The part of the target to be aimed at must be determined by practice. With most pistols at 25 yards the aim is usually taken at



FIG. 207a.—To open the chamber



FIG. 207b.—To load the pistol



FIG. 207c.—To raise the pistol

the bottom edge or in the bottom part of the bull's-eye and at 50 yards in the center or in the upper part of the bull's-eye. (See fig. 206.)

Grasp the stock of the pistol as high up as you can so that the barrel, hand, and arm are as nearly as possible in one straight line. The thumb should be extended along the upper part of the frame. The second joint of the forefinger should be on the trigger.

Start with a light grip and gradually squeeze with the whole hand, the trigger yielding gradually as the gri

is tightened, and continue squeezing without a jerk until the pistol fires. Decide to call the shot and to keep the right eye open.

If the hits are bunched to one side they can be moved to the right by increasing the pressure of the thumb against the left side of the pistol or to the left by decreasing the pressure.

Snapping.—That is, aiming and squeezing the trigger with the pistol not loaded—is most valuable practice.



FIG. 207d.—To withdraw the magazine



FIG. 207e.—To inspect the pistol

No man should load and fire until he has snapped several times to get acquainted with the trigger pull of the pistol. Expert pistol shots do a great deal of

snapping instead of a great deal of firing. Steady holdings can be acquired only by much snapping practice.

Positions.—In the prone position the right elbow has excellent support on the ground. In the kneeling position the firer may kneel on either knee. Kneeling on the left knee affords an excellent rest on the right knee for



FIG. 207f.—Standing position

the elbow. In the squatting position both elbows rest on the knees. In the standing position face the target squarely, or nearly so. Stand upright, not craning the head forward, and extend the arm to its full length.

The object of sighting position and aiming drills is gallery practice.—Anyone who is physically fit for du

can learn to use a rifle and pistol effectively. He must, however, be carefully instructed from the start, as otherwise he instinctively does the wrong thing. After learning the mechanism of the rifle and pistol, he is taught the various positions and how to aim properly in each position. He is then shown how to squeeze the trigger. The Hollifield dotter is found aboard all ships and is an excellent means of developing skill in position, aiming, and squeezing the trigger. After men have learned how to take the various positions, how to aim properly in each position, and how to squeeze the trigger, they are sent to the range, where they actually fire on targets under the supervision of an instructor. When they learn how to fire correctly, they are given an opportunity to fire the record practice to qualify as expert, sharpshooter, or marksman. Extra compensation is paid to those men who qualify in this record practice.

SAFETY PRECAUTIONS

Never point a rifle or pistol at anyone you do not intend to shoot, nor in a direction where accidental discharge may do harm.

On leaving the firing line, open the chamber and keep it open.

Never leave a loaded rifle or one with cartridges in the magazine, or a loaded pistol where it can be picked up by others.

Immediately upon taking up a rifle or pistol make sure by personal examination that it is not loaded.

On the firing line, if the rifle or pistol is loaded, keep them locked until you are ready to shoot, and do not

turn around on the line with a loaded rifle or pistol in your hand.

Never carry the pistol in the holster with the hammer cocked and safety lock on, except in an emergency.

Never put your trigger finger within the trigger guard until you intend to fire and the gun is pointed toward the target.

CHAPTER 42

GUNNERY

TERMS USED

Gunnery is a term used for the science of using the guns, torpedoes, and other ordnance material to the best advantage. Gunnery training is held for the purpose of developing the efficiency of the gun and fire-control crews for battle. Members of both gun and fire-control crews are first carefully selected for each particular duty on the crew and they are then carefully instructed in their duties. This being done, they are given a general training in the duties of the other members of their crew, so that they know what their crew is expected to do. The whole crew is then trained together so as to develop good teamwork for the whole ship's battery. All gunnery training is for the purpose of getting the maximum number of hits per gun per minute on the target.

Hits per gun per minute depend on the rapidity of loading, rapidity of sight setting, and rapidity of pointing and training. Accuracy, of course, is essential as well as rapidity in all these operations. Only the shots that hit are the shots that count.

Rapidity of loading is obtained only when members of the gun crew know in general the duties of other members of the crew, and know their own particular duties in every detail. Each man of the crew must do his particular duty at the right time, with great accuracy, and with good speed.

Rapidity of sight setting is obtained when the sight setter can set his sights accurately and exactly in the minimum of time. He must be trained to catch all ranges and deflections accurately over the voice tube and telephones and must be able to put these accurately on the sights with no loss of time.

Rapidity of pointing and training is obtained when both the pointer and trainer are steady on the target when the firing signal is sounded.

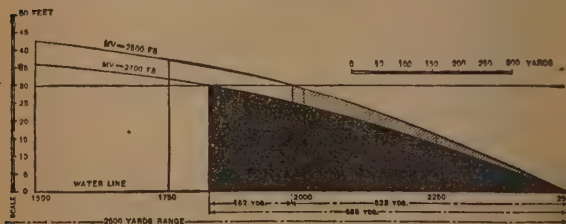


FIG. 208.—12-inch B. L. gun. Danger space increased from 523 yards to 685 yards by increasing velocity from 2,500 foot-seconds to 2,700 foot-seconds

Danger space.—The danger space is the distance a target can be moved toward the gun from the point of fall which will allow the shot to pass through the target. The higher the target, the greater the danger space. If the target is anywhere within the danger space it will be hit. High-powered guns have greater danger space than low-powered guns, as their trajectory is flatter. (See fig. 208.)

Arc of fire.—The arc of fire is the horizontal angle through which a gun, as mounted on board ship, can be

trained and fired. In torpedo defense the guns are assigned in groups which have the same arc of fire so that each group protects a certain quarter of the ship.

GUNS

Caliber.—The diameter of the bore of the gun is called its caliber and is measured in inches. It is more often used to denote the length of the gun divided by the diameter of its bore.

Length of gun.—The length of the gun from breech to muzzle is measured in terms of the caliber, as 12-inch, 45-caliber; 6-inch, 50-caliber, etc. Thus a 12-inch, 45-caliber gun would be forty-five times 12 inches, or 45 feet long. A 6-inch, 50-caliber gun would be fifty times 6 inches, or 25 feet long.

Classes of guns.—Guns aboard ship are classed as turret guns, which are mounted in turrets; intermediate guns, which are guns from 5 to 7 inches in diameter, inclusive; and secondary guns, which are guns below 4 inches in diameter. Guns are also classed by batteries, as main battery, which includes the turret guns; torpedo defense or secondary battery, which includes those guns arranged in groups for torpedo defense; and anti-aircraft battery, which includes guns especially designed for use against aircraft.

Gun-pointer group.—The gun-pointer group consists of the pointer, trainer, and sight setter.

Loading crew.—The loading crew consists of the gun captain (who may also be the plugman), plugman, rammerman, shellmen, and powdermen.

Trajectory.—The path of the projectile through the air is called the trajectory.

CONSTRUCTION OF GUNS

In gunnery it is desired to have high muzzle velocity. A shell at high velocity describes a low curve, while one at low velocity travels higher from the ground. This is true of a baseball. One can throw easily from home plate to second base by throwing the ball well up in the air. If it were thrown as hard as possible and started as high as the easy ball, it would land far out in center field. If it is thrown hard from home plate to second base, it need not be thrown very high; it travels faster and can be thrown more accurately than the slow ball. One naval gun when fired at maximum elevation with 3 bags of powder will shoot 13,000 yards. When fired with full charge, which is four bags of powder, and elevated the same as before, the shell will travel 19,000 yards and strike harder at that distance than in the first case at only 13,000. To fire with full charge at 13,000 yards the gun need not be pointed nearly so high into the air, and the shell will travel faster and more accurately than with the reduced charge.

The working pressure in a high-powered gun is no less than 18 tons per square-inch. Ordinary cylindrical forgings or castings of metal would burst with such pressure, yet this pressure is necessary in order to get the high velocities which are common in modern gunnery. Increasing the thickness of a metal cylinder makes it stronger within reasonable limits. For example, a thin cylinder is only half as strong as one twice as thick, but when the thickness of metal is equal to one half the diameter of the bore, further increase of thickness adds very little to the strength of the cylinder. Making the tube longer would not add anything to its strength.

Guns are now made of nickel steel or vanadium steel. There are various reasons for not using other metal. Copper is too weak and soft, bronze is expensive and is injured by the heat of the powder gases. Cast iron is brittle and easy to crack and is also much weaker than steel; forged steel is the best material available. It is very strong and tough and stretches considerably before breaking. It can be melted and cast and then forged, welded, and tempered.

Guns are built up of several steel tubes one over the other, and it is necessary to understand the principle of their construction. This principle is that tubes in the outer layers are a very tight fit over those in the inner layers, and those in the inner layers are under a heavy crushing pressure when the gun is idle. When the gun is fired, the inner layers as well as the outer ones are all put under a bursting strain together, and in a well-designed gun each layer at this time has an equal strain. Thus it will be seen that all the layers of a built-up gun are used to the limit of their strength in holding the gases of the explosion. In a gun made of a single casting, the explosion produces the greatest strain at the inner surface of the metal. A thick gun of this kind would burst at the inner surface before much strain came upon the outer layers.

The innermost piece of a modern gun is the liner, which is tapered slightly on the outside and extends the full length of the gun. The rifling is cut in the inner surface of the liner. The next layer is the tube, which also extends the full length of the gun. The next layer consists of three hoops— B_1 , B_2 , B_3 . There is a narrow hoop of two pieces called the locking ring which fits over the joint of B_1 and B_2 , fastening them together. There is a similar locking ring at the joint

of B_2 and B_3 . The C hoops form the next layer outside the B hoops and also have two locking rings. At the breech end there are two D hoops. The hoops are all put on by first heating them and then shrinking them on the tube or on the hoops which are already in place. Hoops which fit on the chase of the gun (near the muzzle) are called chase hoops.

The object of rifling the gun is to make the projectile revolve rapidly as it travels through the air. This rapid revolution of the projectile has the effect of making it travel always point first (at least from Naval guns). A spherical projectile will not travel in

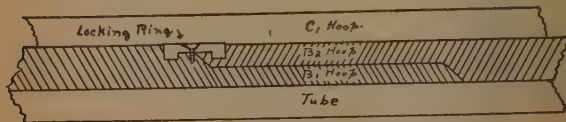


FIG. 209.—Locking ring for hoops

straight line, but curves one way or another. Also the air has a great effect in slowing down the spherical projectile and it will not penetrate armor very well. The more modern shapes of projectiles, when revolving rapidly as a result of being fired through a rifled gun, travel very accurately, and such curving as does occur is always in the same direction and of the same amount. This curvature of the path of the projectile is called the drift; in naval guns the drift is to the right and allowed for with the sights. The air has comparatively little effect in slowing down a modern projectile, and its penetration of armor is better than that of any other shape known.

The pressure of the gases which forces the projectile from the muzzle is just equal to the pressure which tends to force the breechblock out of the breech. Therefore, the breechblock must be locked in place in the strongest possible manner, and some gas-tight fitting is necessary to prevent the gases from escaping through the rear. Two types of breechblock are used in modern guns, the first and more common is like a bolt with some of the threads filed away in segments around its circumference. The places where the threads are filed away are called blanks. Blanks of the same size are filed away from the inside of the breech of the gun; then the plug is locked by revolving it so that the threads in the gun and the threads in the plug are engaged. The object of having blanks in the gun and on the plug is to lock the plug securely with a small amount of rotation; if there are two blanks and two equal threaded segments, the plug may be locked by turning it one-quarter of a turn. Perhaps there will be 10 threads engaged in each segment and it would have taken 10 complete revolutions of the plug to screw it home if there had been no blanks. A modification of this system has been made by using what is called a stepped plug, in which threads of different sizes are used, a smaller thread can then slide into the gun over a large one which is cut in the gun and only about one-sixth of a revolution is necessary in order to lock the plug with threads two-thirds of the way around the circumference (the first one described had threads only halfway around the circumference).

The other type of breechblock is the bolt which is used with small arms. It is called a bolt, and a very

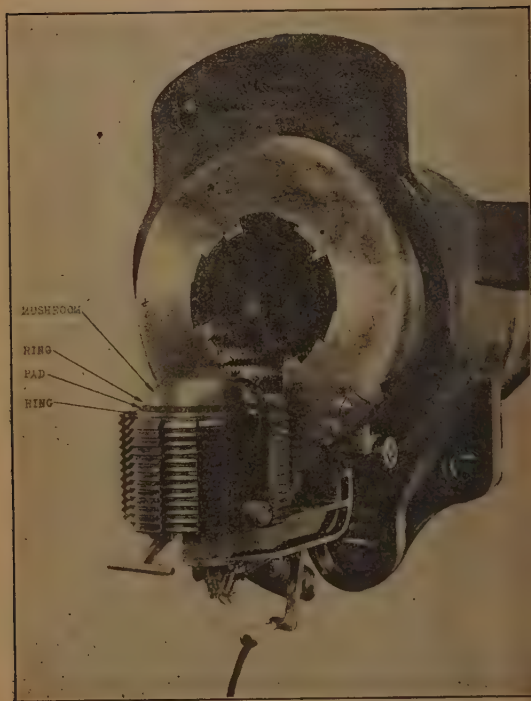


FIG. 210.—Breech of 14-inch gun open

strong arm sticking out at right angles to the bolt is turned down into a groove in the breech forging.

Two systems of preventing gas leakage are in use: The first one used with small arms and case shells generally consists in using a cartridge case of soft metal



FIG. 211.—Disassembled mushroom and gas check pad

which is a neat fit in the cartridge chamber. When the shell is fired, the pressure of the gases expands the walls of the cartridge out against the side of the cartridge chamber making a gas-tight fit. The second system is by the use of a mushroom head, split rings, and gas-check pad. These parts together form a pro-

jection on the end of the plug and fit neatly in a very smooth part of the bore called the gas-check seat. When the gun is fired the pressure of the gases on the mushroom head forces it back against the split ring and the gas-check pad, which squeeze out against the gas-check seat and form a gas-tight joint at this place. This system is used with bag guns.

After a gun is finished it is sent to the proving grounds to be proof fired; one of the proof shots is fired with an overcharge of powder which produces a test pressure in the gun one-quarter greater than is expected with service charges. After proof firing and subsequent inspection the gun is ready for issue to the service.

DEFINITIONS

Breech.—The rear end of the gun.

Muzzle.—The front end of the gun.

Breech-loading gun.—A gun loaded from the breech. All Navy guns are breech-loading guns.

Chamber.—Rear end of the bore in the liner of the gun into which the powder or cartridge case fits. The chamber is always of a larger diameter than the bore.

Bore.—The cylindrical hole which forms the path for the projectile.

Rifling.—Spiral grooves cut in the bore to give rotation to the projectile, which prevents the projectile from tumbling. The raised parts between the grooves are called the lands; all rifling in Navy guns will be uniform twist from now on. (See fig. 212.)

Band slope.—The slope from the bore of the gun to the chamber.

Gas-check seat.—A taper seat at the rear end of the liner into which the gas-check pad and its rings fit.

Extreme care must be taken to prevent scoring or denting the gas-check seat, as any irregularities are likely to allow gases to escape. Once gases start to escape, they quickly burn away the gas-check seat and soon disable the gun.

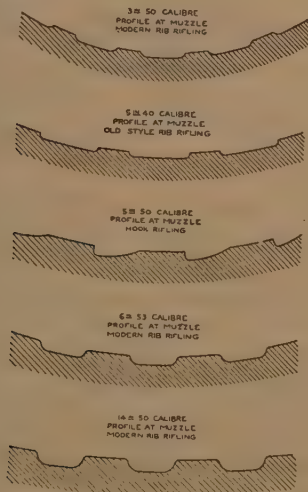


FIG. 212.—Types of rifling

Screw box liner.—A liner screwed into the B_1 hoop (on some guns, these threads also extend to the C_1 hoop) and which contains the stepped threads that hold the plug in place.

Breech mechanism.—The mechanism which closes and opens the breech end of the gun. It consists of the

hinge plates, plug carrier, plug, salvo latch, firing lock and operating cams and levers. (See Fig. 210.)

Plug.—A forged-steel block fitted with stepped threads which fit into the threads of the screw box line and hold the plug firmly in place when the gun is fired.

Mushroom head and gas-check pads and rings.—These prevent the escape of gases to the rear. The gas-check pad is made up of compressed asbestos and tallow sewed up in canvas. It is placed between the mushroom head and the plug with front and rear split rings and a small centering ring. The pad and the front and rear split rings rest in the gas-check seat of the line. (See Fig. 211.)

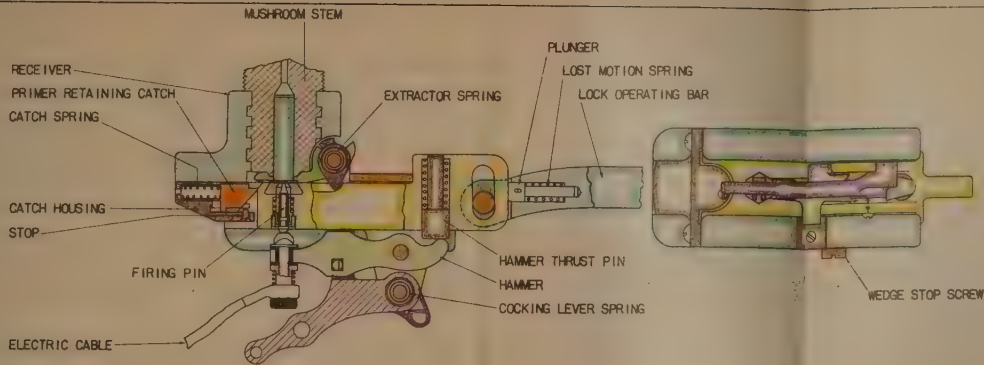
Carrier.—The carrier is hinged to the large hinge plates on the breech of the gun and carries the plug.

Salvo latch.—A latch fitted to the breech of the gun and hooked to the operating lever. When the gun recoils on firing, the hook on the latch disengages the operating lever and allows the breech to be opened.

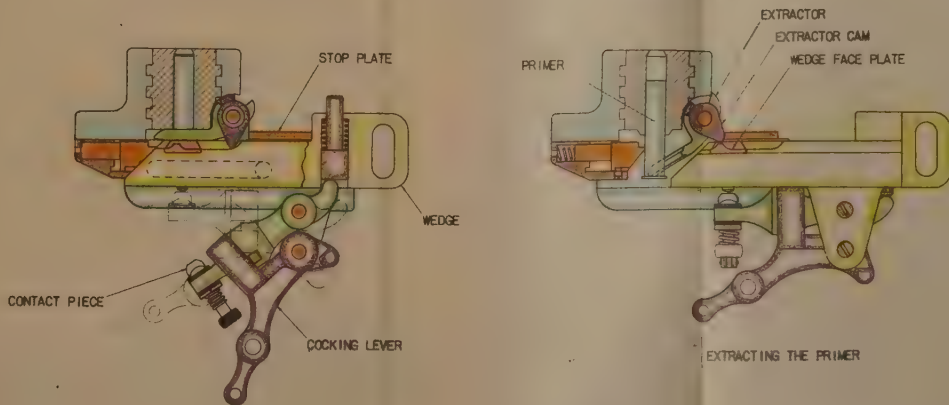
Firing lock.—A lock attached to the rear end of the mushroom stem and fitted with mechanisms to eject primers, firing pin for percussion firing, and connections for firing the primer by electricity. One type of firing lock is now supplied for all guns in the Navy using separate ammunition. (See fig. 213.)

OBJECT OF TARGET PRACTICE AND REWARDS FOR ACCURATE SHOOTING

Target practices are held every year to test out all ordnance material, to give the men practical training in the actual firing of the guns, to give pointers and gun captains an opportunity to qualify for their positions, and to determine the ship's efficiency as a whole.

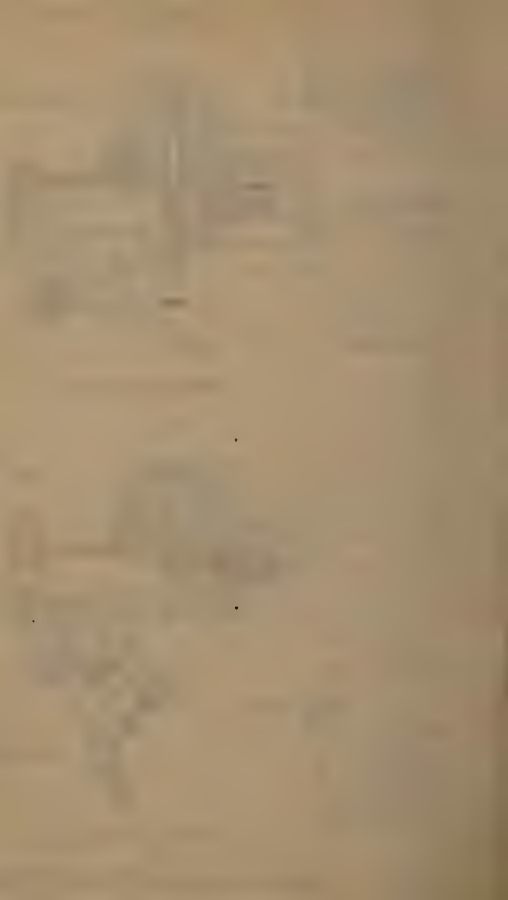


ELECTRIC FIRING POSITION



PERCUSSION FIRING POSITION

FIRING LOCK MARK XIV MOD. 1.



for engaging in battle. A short-range battle practice is held usually every year for qualifying pointers and gun captains and testing out ordnance material. A long-range battle practice is held to determine the ship's efficiency for battle. A night battle practice is held to exercise the crews for action against night attack by destroyers. Antiaircraft torpedo and special practices are held to drill crews in action against aircraft, to drill torpedo crews with their torpedoes, and for special problems. Every practice is made to simulate as closely as possible the conditions which would exist in actual battle.

Cash prizes are awarded gun (including handling-room crews) and fire-control crews which make a certain prescribed standard score at short-range battle practice. First prize is usually \$20 per man; second prize, \$10 per man; and third prize, \$5 per man. In addition, crews which make a certain high score, entitling that gun or torpedo to get a **Navy E**, are given authority to wear the **E** on their uniforms. The Navy Department awards a **gunnery trophy** to the ship which stands first in her class in gunnery for the year. A battle efficiency pennant, sometimes called the **meat ball**, is awarded to the ship which stands first in her class in the average of both her gunnery and engineering competitions for the year. The ship flies this pennant from the foremast for the whole year in which won.

All men have records of their work kept in the gunnery department. These gunnery records are a part of their service records. It contains all the gunnery stations filled by that man, his efficiency at that station, the score his crew made in target practice, his qualifications, and recommendations for his future training.

METHOD OF GUN LAYING

Most of the guns at the present time have telescopic sights. In a telescopic sight there are two cross wires, a horizontal and a vertical one, intersecting at a point. In Figure 214 AC is the horizontal cross wire and BD is the vertical one.

The aiming of the gun is accomplished by two men, a pointer and a trainer. The pointer moves the gun in elevation; that is, he moves it up and down. The trainer moves the gun right and left. The pointer's duty, then, is to keep the horizontal wire AC on the

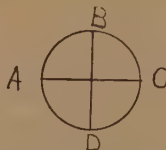


FIG. 214.—Cross wires of telescopic sights

center of the target or whatever point is designated as the point of aim. The trainer does the same with the vertical wire. The pointer, however, does the firing. He fires when the intersection of the cross wires is on the point of aim. This system of firing is known as pointer fire.

Some pointers, especially when firing for the first time, get so excited and are so afraid the telescope will hurt them that they will not aim accurately; or, if they do, they jump away from the eyepiece or even away from the gun, thus failing to keep the gun pointed during the firing interval, losing valuable time and accomplishing poor results. A pointer who can n

overcome this nervousness should not continue to fire the gun. Men whose nerve and physical training will withstand the exhaustive tests incident to battle are those to be desired. A man's rating, general knowledge, or executive ability is not allowed to have weight in his selection as a gun pointer.

Qualified pointers receive extra pay, depending on their qualification. A heavy-gun pointer, first class, gets \$5 per month additional pay.

SAFETY PRECAUTIONS

Men must realize that safety in the firing of guns, and care and handling of explosives generally, is dependent upon a thorough knowledge by every man in the safety precautions. One man, not knowing these precautions at a critical time, can cause terrible accidents to occur. For this reason Navy Regulations require that the safety precautions in regard to the turrets, guns, and handling rooms be posted at each gun and in each handling room. All men must study these regulations, and will be drilled in them at every gunnery drill. As these precautions are always available for study by all men, they will not be given in this manual.

TYPES OF GUNS

Breech-loading rifle.—All rifled, breech-loading guns in the Navy of 4-inch caliber or over are of this type.

Bag guns.—These are guns whose powder is not in metallic cases. The projectiles and powder are put in separately, the powder being in bags.

Case guns.—These guns have powder in metallic cases. The projectiles and powder are combined into a cartridge.

Rapid-fire gun.—All 1-pounder to 3-inch guns in the Navy, having single shot, using fixed ammunition, and having a quick-acting breech mechanism operated by a single movement of the hand or automatically opened by the discharge of the gun.

Semiautomatic gun.—A single-shot rapid-fire gun in which one operation of the hand is required for each fire, the other operations being performed automatically by the discharge of the gun.

Automatic gun.—One in which, the first shot having been fired by hand, the operations of ejection, loading and firing are performed automatically and continuously by the explosion of the cartridges as long as ammunition is properly fed and the trigger held back.

Machine gun.—A gun of small-arm caliber, from which a continuous rapid fire can be maintained by operating its mechanism either by hand or by motor power, causing successively, loading, firing, and extraction of the empty shell.

Field gun.—Light guns, usually of or less than 3-inch caliber, mounted on field carriages for operations on shore. When of rapid-fire gun type, and specially designated as "field," they are usually shorter, lighter in weight, and less in power than ship's guns of the same caliber. Sometimes they are combined field and boat guns, having a special mount for boat use.

PRIMERS

Primers are copper cases similar to rifle shells (without the projectile), which are used to ignite the powder in the firing charge of a gun.

Combination percussion and electric primers are used for all heavy and intermediate guns, and percussion primers are used in 3-inch guns and under.

The general features of a primer are: The primer stock is made of bronze; it is cylindrical in shape, the diameter of the base being about six-tenths of an inch and the length of the primer 2 inches. The primer is shown in the accompanying figure (see fig. 215). The operation, when firing by percussion, is as follows: A plunger in the base of the primer ordinarily has its point just touching a Winchester primer cap containing fulminate of mercury. The primer firing charge, consisting of about 40 grains of rifle powder, is in the lower part of the primer stock. When the gun is fired by percussion the firing pin strikes the base of the plunger, and the plunger point, in turn, strikes the fulminate of mercury cap which fires the primer charge and consequently ignites the firing charge in the gun. To provide for electric firing the plunger, plunger cup, and Winchester primer are separated from the primer case by an ebonite bushing. When the breech of the gun is closed the firing pin makes contact with the base of the plunger. The current passes from the firing pin through the plunger, plunger cup, and bridge, a short platinum wire with a wisp of guncotton around it. One end of this platinum wire passes through a cavity filled with rifle powder, while the other end is secured to the primer stock. When the firing key of the gun is closed current flows through primer, gun, gun carriage, metal of ship back to battery. At the instant of closing the firing key the current passes through the plunger, heats the platinum wire, ignites the guncotton and powder, and fires the gun.

The primer just described is used for heavy guns firing separate ammunition; and it is, of course, inserted in the firing lock by a member of the gun's crew. Other types of primers, however, differ only in

details. Combination primers for rapid-fire guns and all percussion primers are fixed in the base of metallic cartridge cases. In general, primers fixed in the cartridge cases are much longer than those designed for use with separate ammunition. If you can firmly fix in your mind the details of the primer just explained and illustrated, you will have no difficulty in understanding the action of any primer. (See figs. 215 and 216.)

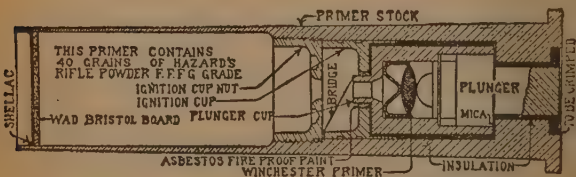


FIG. 215.—Combination primer for separate ammunition

FUZES

An ignition fuze is used to explode the bursting charge of a projectile. Armor-piercing and common projectiles have the fuze located in the base of the shell. Shrapnel and illuminating projectiles have the fuze in the nose of the shell. (See fig. 218.)

The action of the latest type of ignition fuze is kept secret. As in the case of the primer, it is best to get the general principles on which a fuze operates firmly fixed in your mind rather than confuse yourself with the details of the various types of fuzes. Consequently, in Figure 217, a typical fuze for an intermediate-caliber projectile is illustrated. The stock, which is of brass, screws into the base of the projectile. When the pro-

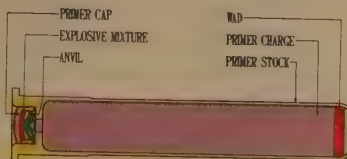


FIG.1. CASE PERCUSSION PRIMER, MARK X, MOD. 4.

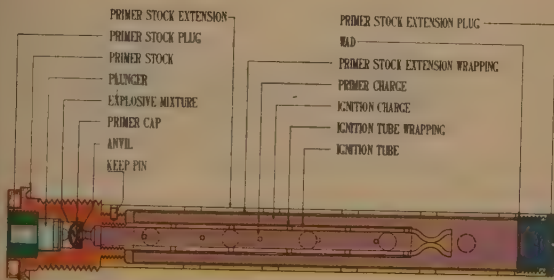
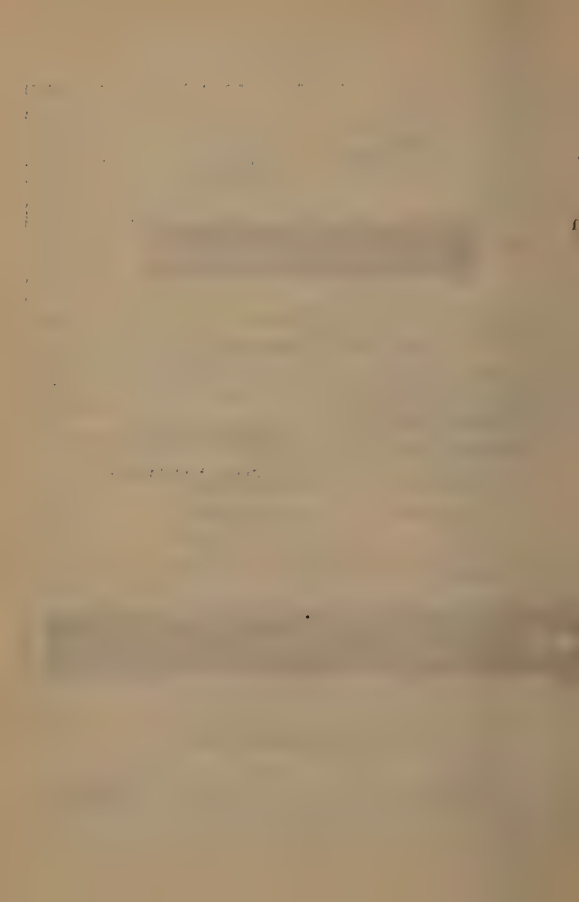


FIG.2. CASE PERCUSSION IGNITION PRIMER, MARK XIV.

WAL. PL. IV-XB-CL-43.



jectile leaves the gun the rotation about its axis given it by the rifling of the gun causes the centrifugal locking bolt shown in the plate to fly out, allowing the fuze to "arm"; that is, allowing the point of the firing plunger to fly forward and take a position directly in rear of the fulminate of mercury cap that is down. When the projectile strikes, the plunger flies forward, explodes the cap, which in turn ignites the black powder in the forward end of the fuze, and finally the bursting charge in the shell. The tracer is for the purpose of affording a means to follow the

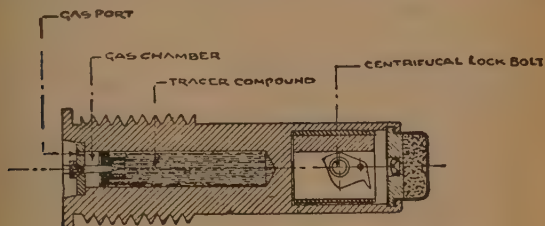


FIG. 217.—Medium caliber tracer fuze. Mark 1

shell in flight when firing at night; the tracer compound is ignited by the gases from the firing charge in the gun and continues to burn during the flight of the projectile.

The time fuze used in shrapnel and illuminating projectiles can be set to cause the explosion of the shell at a certain time after the gun is fired. The fuze, when set for a certain length of time, exposes a certain length of a powder train, which is ignited when the gun is fired. When the length of powder train is burned the flame ignites the bursting charge.

POWDER

Smokeless powder is used in our Navy. It is made up into grains of various sizes for different-sized guns. It is put up in silk bags, carefully sewed to keep the proper size. These bags are stowed in the magazines in air-tight tanks. Powder in fixed ammunition is contained in the metallic cartridge cases.

A charge for any gun is made up of one or more powder bags. A 5-inch gun has 1, while a 16-inch has 4.

At the base of each powder bag there is secured an ignition charge, composed of black powder, which is ignited by the primer and in turn ignites the smokeless powder. The ignition charge end of each bag is painted red, and this red end must always be placed next to the breach. The primer will not ignite the smokeless powder by itself. Failure to put the red end next to the breech will almost surely cause a hangfire.

T. N. T. is used now for charges for the war heads of torpedoes and mines. They are exploded on contact by means of a primer, which explodes a charge of granulated or more sensitive T. N. T., which in turn explodes the T. N. T. charge. T. N. T. is comparatively safe to handle.

PROJECTILES

Projectiles used in the Navy are: Armor-piercing, common, target practice, nonricochet, shrapnel, and illuminating projectiles. (See fig. 219.)

Armor-piercing shell.—It is a shell intended to penetrate armor. The armor it will penetrate depends, of course, on the caliber of the shell, but in all cases it may be depended upon to penetrate considerably deeper than the common shell of equal caliber. It is cylindrical.

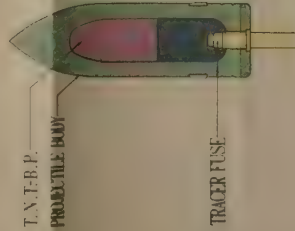


FIG. 1 COMMON.

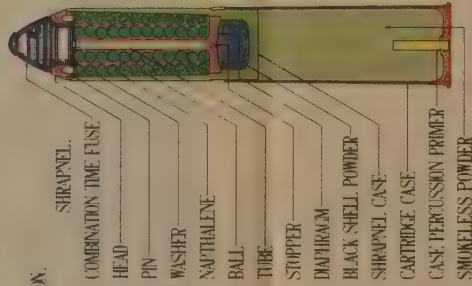


FIG. 3 SERVICE.



FIG. 5 TARGET.

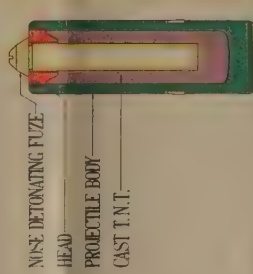


FIG. 2 FLAT NOSE

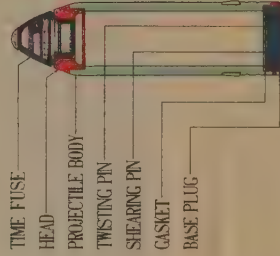


FIG. 4 ILLUMINATING.

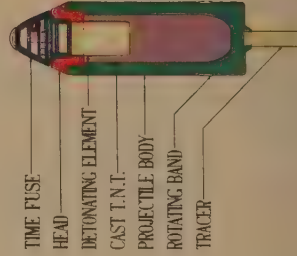


FIG. 6 CLASS B ANTHAIR CRAFT.

AMMUNITION ASSEMBLED WITHOUT
DISTANCE PIECES OR WADS AND TO
BE THOROUGHLY CRIMPED BEFORE
ISSUE.



A.P. EXP. D.
TR.



A.P. EXP. D.
NO TR.



A.P. EXP. D-GAS
TR.



A.P. EXP. D-GAS
NO TR.



COM. B.P.
TR.



COM. B.P.
NO TR.



COM. D-B.P.
TR.



COM. D-B.P.
NO TR.



COM. T.N.T.-B.P.
TR.



COM. T.N.T.-B.P.
NO TR.



CL.B. TNT (CAST)
TR.



CL.B. TNT (CAST)
NO TR.



SHRAP.
TR.



SHRAP.
NO TR.



ILLUMINATING
(S.S.)



CL.B. P.N.
TNT. (CAST)

FIG. 219

dricul, with a solid pointed ogival-shaped head. A soft steel cylindrical cap is fitted on the point of the armor-piercing shell. When the shell strikes armor, the first shock of impact bends the hard plate in, while the projectile pierces its cap; the hard point of the shell then strikes the hard surface of armor when the latter is bent in nearly to its breaking point and the shell centers easily.

Common shell.—Same as the armor piercing, except that it is not fitted with the soft steel cap. Its bursting charge is usually black powder, where that of the armor-piercing shell is “explosive D.”

Target practice.—Target-practice shells are of the same weight, size, and shape as the common shell, but are made of much cheaper materials. Instead of a bursting charge they are filled with sand or other heavy material to bring the shell to a proper weight.

Nonricochet.—This is a flat-nosed projectile with a large bursting charge for use against submarines.

Shrapnel is cylindrical in shape, with a round hemispherical head; it is made of cast steel, has a small bursting charge and thin walls, the cavity of the shell being filled with a large number of small balls (from 200 to 400), about one-half inch in diameter, packed in rosin or sulphur.

It is used mainly against exposed bodies of men ashore or on deck, or against aircraft. The shrapnel should be set to burst about 50 yards in front of the target.

A special high-capacity shell, similar to common shell and fitted with a time fuze is now used against aircraft by antiaircraft batteries in the Navy.

Illuminating projectiles.—These are shells, fitted with a time fuze which, when exploded, releases and ignites

a large charge of slowly burning pyrotechnics which give off a bright illumination. A parachute is connected to these pyrotechnics to delay its descent.

ROTATING BAND

A rifling band—called a rotating band—is secured in an undercut score around the projectile near the base. The rotating band is made of copper; its diameter is equal to the diameter of the bore at the base of the grooves of the rifling. When the gun is fired, the bands of the rifling cut into the surface of this soft metal band causing it, and hence the projectile to which it is secured, to turn in the bore. The rotating band also prevents the escape of the powder gases past the projectile and centers the rear end of the projectile in the bore of the gun.

SUMMARY

1. **The firing charge** is the charge in the gun which, on firing, drives the projectile from the gun. The firing charge is of smokeless powder.
2. **The ignition charge** is in the base of the sections of the firing charge. The ignition charge is of black powder.
3. **The bursting charge** is in the shell. It consists either of black powder "explosive D," or of T. N. T.
4. The powder in a bag gun comes in silk bags; never in metallic cartridge cases.
5. The ammunition for a case gun always comes in metallic cartridge cases.
6. **A primer** fires the ignition charge in the gun.
7. **A fuze** fires the bursting charge in the shell.

MAGAZINES AND SHELL ROOMS—LOCATION AND PRECAUTIONS NECESSARY

Powder is stowed in specially constructed rooms, in places fully protected by armor, and as far away as possible from the boiler and engine rooms. These rooms are placed as near as possible to the guns which they supply. Turrets have their powder magazines and shell rooms directly below them. All powder magazines are fitted with connections for flooding them quickly with water in an emergency. They are lighted with special water-tight lighting fixtures containing two lights.

Powder magazines for other than turret guns are considerably scattered in both the forward and after parts of the ship. Ammunition conveyors carry the ammunition from the magazines to a conveyor that runs for and aft on each side of the ship. This latter conveyor then feeds the various ammunition hoists to the guns. Shell stowage spaces are provided near these fore-and-aft conveyors. All men should learn where the magazines and shell stowage spaces are located on their ship, and understand the system of ammunition supply to all of the guns.

Powder for guns of the same caliber is stowed in one magazine. Service ammunition for use in battle is always kept separate from target-practice ammunition. Fixed ammunition is always kept in a separate magazine by calibers.

The safety precautions in regard to the magazines and shell rooms follow:

1. No naked light shall ever be taken into a magazine or other compartment containing explosives of any kind.

2. During firing, no ammunition other than that immediately required shall be permitted outside the magazines.

3. The magazine flap doors of only such magazine as are being used to supply charges shall be open, the flaps in all cases being down except during the time of actual passage of the sections of the charge through the door.

4. There shall not be exposed (removed from the tanks) at one time in any one magazine more than one charge for each gun supplied by that magazine, and then only as necessary to supply the demand in the handling room; nor shall there be permitted at any time an accumulation of exposed sections for more than one charge for each ammunition hoist outside the magazines in the handling room.

5. No matches shall be taken into the magazines.

6. Always lead out fire hose in handling room and connect up to plug. This should be done at drill as well as at actual firing.

DUTIES OF HANDLING ROOM'S CREW

The handling room crew in a turret keep the gun supplied with shell and powder. The types of shell hoists and powder conveyors vary on different classes of turret ships. All men in turrets must know how their particular turret is supplied with both shell and powder.

GUN STATIONS

All men must be able to explain in detail the duties of his own gun station. In addition each one must be able to give the general duties of all the other members of his crew.

CHAPTER 43

SIGNALS

1. All seamen, first class, must know how to signal by means of semaphore. You will be called upon to use this system, especially if you stay in the seaman

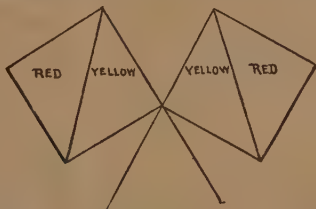


FIG. 220.—Semaphore flags—red and yellow

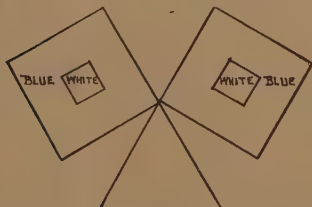


FIG. 221.—Semaphore flags—blue and white

branch. This is the standard system of transmitting dispatches during daylight for short and medium distances. It employs two hand flags from 15 to 18 inches square, and either blue and white or red and yellow.

2. The alphabet is given on page 174. It is printed the characters appear when the sender faces you. When sending the arms must be fully extended, making your motions fast and clearly defined by the shortest possible route, making a distinct pause at each exact position. Do not shift from one position to another in a listless slovenly manner.

3. Always spell out numbers.

4. The "front," "answering," and "attention" signals are shown in the plate.

(See p. 174 for semaphore alphabet.)

INTERNATIONAL ALPHABET FLAGS

The alphabet flags used in the Navy are shown on Plates IV-VI in front of book together with the names and dot-and-dash equivalents. They consist of 19 square flags, 5 pennants, and 2 triangular swallow-tailed pennants called burgees—one for each letter of the alphabet. All alphabet letters are given a name to prevent confusion and mistakes due to the similarity in sounds of letters when calling out flags. The name given each letter of the alphabet begins with the letter which it names. Thus, the name of the alphabet letter **M** (**Mike**) begins with the letter **M**.

FLASH-LIGHT METHOD

The Morse alphabet (the dot-and-dash system) is used in transmitting messages by searchlight, blinker tube, Aldis lamp, wigwag, and whistle. The characters are made by alternately exposing and obscuring the light. A short flash is represented on paper by a dot and a long flash represented by a dash. This morse code, shown on Plates III-VI, should be memorized.

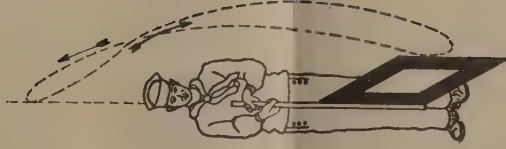


FIG. 222.—Method of using Aldis signal light to signal an airplane

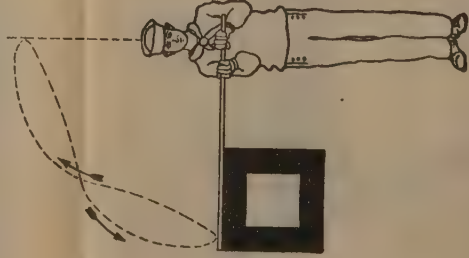


FIG. 223.--Wigwag

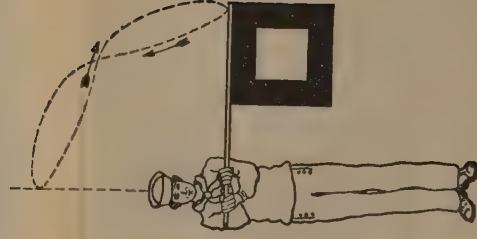
POSITION



FRONT



DOT



DASH

FIG. 224.--Wigwag

All searchlights for signal purposes have Venetian blind shutters which are easily operated by hand. In this manner the ray of the searchlight is broken up into short and long flashes.

The yardarm blinkers are all around lights located at the yardarms and operated by a key on the signal bridge.

The portable tube blinker consists essentially of a light in a tube which is closed at one end. The electric lamp is operated by a key. It is used when it is desired to send signals from ship to ship without the flashes being visible from any point outside of the line of the tube.

The Aldis signal lamp is a light, portable signaling searchlight for short ranges.

WIGWAG

Wigwag employs the international Morse alphabet, numerals, and special Morse signs.

SIGNALING BY WIGWAG

Wigwag flags are made of red and white linen. If the flag is red the center is white, or vice versa. Only one flag is used in sending. The flagstaff is about 4 feet long.

A motion to the right of the sender, embracing an arc of 90° , starting with the vertical and returning to it and made in a plane at right angles to the line connecting the two stations, represents a dot.

A similar motion to the left represents a dash. The only signs peculiar to wigwag are:

1. The **Attention** sign. This sign is made by waving the flag overhead from left to right. (See figs. 223 and 224.)

2. The vertical position is with the flag held vertically, the signalman facing directly toward the station with which it is desired to communicate.

3. The **Front sign**. The sign is made by bringing the flag downward directly in front of the sender and instantly returning it to the vertical position. This is best done by bringing the flag through an arc of 135° in the direction of the line of transmission.

The correct motion is to make the end of the staff describe an elongated and narrow figure 8, so that the flag on its upstroke follows a path about 4 inches toward the wind on its path on the down stroke.

Signaling by hand light or torch.—To use a torch or hand light for wigwag at night, a footlight must be employed as a point of reference to the motion. The attention sign is made by swinging the light from left to right several times. When using a lantern it is most convenient to swing it outward and upward to the right of the footlight for a dot, to the left for dash, and raised vertically.

FLAGS

The special flags of the Navy are shown in Plates I, II, and VII, in front of book. The numeral flags and pennants are shown in Plate III, in front of book. The numeral flags are used in signals and the pennants in ship calls, each ship being assigned a call.

PART FOUR

ADVANCED SEAMANSHIP AND GUNNERY

CHAPTER 44

BOAT GEAR; PROVISIONS; LIFEBOATS; DUTIES OF COXSWAIN; GASOLINE PRECAUTIONS; BOAT SALUTES; RULES OF THE ROAD; RECREATION PARTIES

BOATS—TYPES, NOMENCLATURE, BOAT GEAR

See chapter 32, Part III, page 497.

BOAT-BOX CONTENTS; PROVISIONS CARRIED ON DIFFERENT OCCASIONS; CONTENTS AND OUTFIT AT "ABANDON SHIP;" ARTILLERY BOATS; AMMUNITION FOR BOATS

BOAT BOX

The boat box must be water-tight. It must be provided with a lock and key, and the boat must never leave the ship without the lock and key. It shall contain the following articles:

- | | |
|----------------------------------|---|
| (1) Ax. | (11) Bits, auger, size $\frac{1}{4}$ -inch, |
| (2) Hatchet. | $\frac{1}{2}$ -inch, $\frac{3}{4}$ -inch, and |
| (3) Saw, panel. | 1-inch. |
| (4) Hammer, claw. | (12) Marlinspike. |
| (5) Screw driver. | (13) Palm, sewing. |
| (6) Chisel, hand, cold. | (14) Needles, sailmakers'. |
| (7) Iron, calking, boat. | (15) Nails, steel wire, assort- |
| (8) Tool sets. | ed. |
| (9) Pliers, combination gas, | (16) Screws, brass, wood, as- |
| 10-inch. | sorted. |
| (10) Brace, bit, ratchet, 8-inch | (17) Tacks, copper, $\frac{3}{4}$ -inch. |
| sweep. | (18) Lead, sheet. |

- | | |
|---|---|
| (19) Seizing wire, 2 pounds,
1/8-inch. | (28) Tallow, 1 pound. |
| (20) Lamp wick, cotton. | (29) Candles, 6. |
| (21) Yarn, spun. | (30) Matches, safety, in her-
metically sealed pack-
age. |
| (22) Twine, sail. | (31) Boat Book, United States
Navy. |
| (23) Lines, fishing, on reels. | (32) Lead, sounding, 5-pound. |
| (24) Hooks, fish, assorted. | (33) Line, lead, boat, cotton
braided (19 fathoms
long). |
| (25) Sinkers, for fishing lines. | |
| (26) Lantern, boat signal,
bull's-eye (shutter). | |
| (27) Oil, illuminating. | |

MEDICINE BOX

The following articles shall be assigned to each boat. They shall be kept in a designated place on board ship, and placed in the boat only when required for drill or service.

One small medicine emergency box containing the following articles and directions for giving medicines:

Adhesive plaster, 2 inches wide	spool	1
Bandages, gauze, assorted	number	12
Brown mixture tablets	bottle	1
Calomel tablets (1/2 grain)	do	1
Carbolated vaseline	jar	1
Cathartic pills	bottle	1
First-aid packets	number	6
Gauze, compressed	packages	12
Lead and opium tablets	bottle	1
Liquid extract of beef	bottles	2
Muslin	yards	2
Plaster, capsicum		1
Pins, scissors, and dressing forceps (set in case)		1
Quinine tablets (3-grain)	bottle	1
Soda bicarbonate	can	1
Tourniquet, instant, rubber	number	4

COOKING UTENSILS

These are supplied only when required.—For example, at abandon ship they are undesirable complications. Boat expeditions may or may not require them, depending upon the nature of the service.

The cooking outfit for boat expeditions, when it is expected to do cooking in the boat, would consist simply of:

- (1) Galvanized iron bucket, or pan, filled with sand.
- (2) Fuel.
- (3) Iron scouse kettle and frying pan.
- (4) Mess gear.
- (5) Additional portions of the ration, such as butter, salt, pepper, sugar, coffee, etc., would be necessary. These can be most expeditiously supplied by the men who provide mess gear, if they are to be supplied in small quantities. If providing for a considerable force ashore, the amounts of each shall be carefully determined and provided by the commissariat.

PROVISIONS

(1) The amount of provisions and water carried under various circumstances will depend upon the probable length of service and the probable requirements of the expedition.

(2) Bread, if carried, will be carried in water-tight tins. These should be supplied in wooden boxes in order to preserve the tins intact.

(3) Fresh water is carried in breakers containing 8 or 5 gallons each.

(4) Canned meats, if carried, will be in wooden boxes in which shipped.

(5) Coffee, tea, sugar, and salt, if for a small expedition, are carried in small waterproof packages;

if provided by the commissariat for a considerable body of men, in the original cases in which received on board ship.

(6) Other portions of the Navy rations may be carried in actual service, when time and circumstances permit.

(7) Except in an emergency, such as abandon ship, the commissary officer will ration men leaving the ship, having in mind the character of the service and probable time of absence from the ship.

(8) The following is suggested as a basis per 100 rations:

	100 rations
Bread (hard or soft)-----	pounds-- 1
Corned beef (canned)-----	do-- 1
Baked beans (canned)-----	do-- 1
Coffee (roasted and ground)-----	do-- 1
Sugar (granulated)-----	do-- 1
Tomatoes (canned)-----	do-- 1
Salt (table)-----	do-- 1
Pepper (black)-----	ounces-- 1

Abandon-ship provisions.—(1) *Rations.*—The abandon ship ration is 1 pound of hard bread and three fourths pound of canned meat. The commanding officer will specify the quantity and location of hard bread and canned meat which is to be kept in readiness for placing in boats in event of necessity for abandoning ship.

(2) *Water.*—The amount of water carried in breeches for abandon ship is based upon the number of men that can be carried at one time in the ship's boats. The allowance per man on this basis is one-half gallon on battleships, battle cruisers, and cruisers, first line and 1½ gallons on all other vessels.

The following table gives the number of water breakers which belong to the boat. These breakers carry sufficient water for abandon ship for battleships, aircraft carriers, cruisers, mine layers, destroyers, and small patrol vessels.

Length of boat	Breakers belonging to boat		Length of boat	Breakers belonging to boat		
	Num- ber	Gallons per breaker		Num- ber	Gallons per breaker	
50-foot motor boat.....	4	8	31-foot racing cutter.....	1	8	
50-foot motor barge.....	2	8	28-foot cutter.....	2	8	
45-foot motor boat.....	2	8	30-foot whaleboat.....	{	2	8
26-foot motor boat.....	2	5	28-foot whaleboat.....		1	5
26-foot motor whaleboat.....	2	5	24-foot whaleboat.....	{	2	8
21-foot motor dory.....	1	5	20-foot dinghy.....		1	8
50-foot motor launch.....	12	8	16-foot dinghy.....	1	5	
40-foot motor launch.....	6	8	14-foot dinghy.....	1	5	
36-foot motor launch.....	5	8	12-foot wherry.....	1	3	
33-foot motor launch.....	4	8			3	
30-foot motor launch.....	3	8				
24-foot motor launch.....	2	5				

HOSPITAL BOATS

(1) The boat with the ambulance party shall carry the medical officer and a large medicine chest containing stimulants and medicines. Each article shall be labeled in English and distinctly marked, with directions for administering and quantity of dose, in terms that anyone can understand. The medical officer shall also take a set of surgical instruments, stretchers, and other necessary surgical conveniences.

(2) The hospital boat shall carry no arms whatever, and shall fly a Red Cross flag on a staff in the bow.

ARTILLERY BOATS

(1) If gun is to be used on boat only, artillery boat shall carry the following:

(a) Boat gun mount, complete, secured to deck plate.

(b) All implements for service of the gun.

(c) Box of accessories and spare parts.

In short, the same supplies should be provided as for the service of the gun on board ship.

(2) If gun is to be landed.

(a) Field carriage, with all implements for service of the gun. Shifting spar, grommet, and lashing, and skids or other means for landing the gun.

(b) Haversack for landing armorer's tools; also accessories, spare parts, and all articles necessary for the service of the gun.

(3) If gun is to be used both in the boat and on shore both the boat mount and the field carriage shall be provided, and accessories, spare parts, etc., as above enumerated.

(4) The equipment of the artillery boat for drill shall be in all respects the same as if the gun were to be fired in battle.

AMMUNITION

Ammunition shall be carried in the chests in which supplied. The amount will be specified in each case and will depend upon the nature of the service. The following is the minimum amount to be supplied:

Three-inch landing gun.—Filled ammunition boxes (24 rounds), or

Three-inch field gun.—Filled ammunition boxes (30 rounds).

One-pounder rapid-fire.—Filled ammunition box (60 rounds).

Rifle.—One hundred rounds for each rifle.

Pistol.—Forty-eight rounds for each pistol.

ALL ORDERS GIVEN IN SMALL BOATS UNDER OARS

See chapter 10 of Part I.

ABILITY TO PULL A GOOD OAR

See chapter 11 of Part I.

LIFEBOATS IN DETAIL, SECURING FOR SEA, LOWERING, HOISTING

LIFEBOATS AT SEA AND IN PORT

At sea.—(1) The United States Navy Regulations require that “when at sea, the boats best adapted as lifeboats, one on each side, shall be always ready for lowering.”

(2) At the beginning of each watch at sea the officer of the deck shall have the lifeboat crew of the watch mustered abreast the lee boat, and the coxswain of the lifeboat crew of the watch shall satisfy himself by personal inspection that both lifeboats are ready for lowering and shall report the fact to the officer of the deck.

(3) A lifeboat is secured for sea—i. e., ready for lowering—when in the following condition: Boat at the davits, griped in, falls clear, detaching apparatus ready for detaching at the word, steering oar shipped in crutch, oars fitted with trailing lines and ready for getting out quickly, rowlocks shipped and fitted with lanyards, plug in, sea painter brought aboard the boat

through the bow rowlock on the side of the boat toward the ship and half hitched or toggled around the second thwart, life lines bent to the span, life jackets in boat, lantern filled and trimmed (and at night lighted), and all articles of the boat equipment in the boat and ready for use, with two days' water and provisions for the crew. When the coxswain of the lifeboat crew of the watch reports a lifeboat ready for lowering, it is understood that the boat is in the above condition and that the crew of the watch have been mustered, each man abreast his own thwart (or station) of the lee boat, and that each man understands his duties at "man overboard." In lowering, the officer or coxswain in charge of the lifeboat will give command for detaching.

Motor whaleboats when used as lifeboats are secured for sea when in the following condition: Set up chocks, gripped down with gripes or 2½-inch manila line with a quick releasing pelican hook or toggle, forward and after steadying lines rigged and coiled down clear of the deck, sea painter secured to a thwart as in the lifeboat, and lead clear, gasoline tank full of fuel, engine tested hourly, rations, life preservers, water, etc., as for the lifeboat; in addition, the regulation fire fighting equipment required for motor boats. The ring of the boat sling hooked on the single whip of the crane, tripping line to the crane hook rove off, and coiled clear on deck. Spare oars are carried as in a motor boat.

The tripping line is used to release the sling ring from the hook on the crane fall. It accomplishes this by means of the safety runner. This is a wire about 3 fathoms long. One end of it is connected to the top end of the hook. The wire runs down the hook through the sling ring and then up and inboard to a

eye where the tripping line is bent on. The tripping line goes from this eye to a block on the arm of the crane and thence down to the deck where it is belayed and coiled clear for running. When the boat is water-borne, pulling the tripping line from deck straightens out the bight of the safety runner and lifts the sling ring from the hook.

In port.—(1) The United States Navy Regulations require that “in port one or both lifeboats be kept ready for immediate use from sunset until colors the next morning.” Hence when there is no suitable boat in the water ready for immediate use as a lifeboat, at least one boat suitable for this purpose must be kept ready for instant lowering. This is particularly necessary when the boats in the water are heavy and unwieldly or are so secured that they could not be quickly used in an emergency or in rough water or in a strong tideway.

(2) Owing to its handiness, a dinghy is well suited for use as a lifeboat in port in good weather, and under such conditions it may be designated as the lifeboat for port service. The boats designated for use as lifeboats in port are required to carry only the usual equipment for boats in port, but the gear must be in order and ready for instant use, and the lantern must be ready in the boat for lighting, or else a lighted lantern ready for use must be kept at hand on deck.

NOTES ON LIFEBOATS

(1) Lifeboats should be gripped securely against their strongbacks, with chafing pads between the boat and the strongbacks, and the gripes, secured by toggle or pelican hook, ready for instant freeing.

(2) If gripes stretch and become slack, they should be set up taut.

(3) At night, boat falls should be coiled down on deck, clear for running; during the day the coils may be triced up to davit with becket and toggle.

(4) Where Raymond automatic releasing hooks are fitted, falls should be rove continuous between davit heads.

(5) The sea painter is led from a point well forward on the ship, outside of everything, and secured to the inboard side of the second thwart in such a manner that it can be readily cast off; if necessary, it is stopped up out of the water by a rope yarn.

(6) The knotted life lines, one for each member of the crew, hang from the span for the use of the crew in case of accident in lowering or hoisting.

(7) The life jackets should be placed, one under each thwart and one under the stern sheets, and each man in the lifeboat shall put one on before the boat is lowered. This is necessary because of the danger of the boat swamping alongside in rough weather. All men must be cautioned, when putting on the life jackets, to make fast all of the beckets.

(8) If the lantern is not provided with a shutter, it will be fitted with a canvas screen, and when lighted and not in use shall be put in the boat bucket.

(9) Lifeboat crews for each watch are designated on the ship's station bill. When a lifeboat crew is mustered, the men shall muster in line abreast their boat (or the lee boat) in the order of their thwarts, facing inboard; men stationed to lower will be abreast their respective davits, and shall personally see that the falls are clear.

(10) The proper members of the crew shall be permanently stationed for unhooking the falls, tending the sea painter, and for performing other duties in connection with lowering. The lifeboat crew of the watch, including the men stationed for lowering, for observing the man, for signaling, etc., are not to leave the weather deck without permission, except for meals.

(11) At night the lifeboat crew of the watch, and other men stationed in connection therewith, shall remain near their stations.

LOWERING A LIFEBOAT (OR OTHER BOAT) AT SEA IN BAD WEATHER (WITH WIND AND SEA FORWARD OF THE BEAM)

(1) At the call "**Man overboard**" (which may be given by word of mouth or sounded on the bugle), every member of the lifeboat crew of the watch goes to his station on the run. The lee lifeboat should be manned. If there is any doubt about which boat is to be lowered, the officer of the deck immediately indicates it by the command "**Clear away the starboard (or port) lifeboat.**" The men take their seats on the thwarts; each man immediately puts on a life jacket, gets his oar ready, and then, if not otherwise engaged, seizes a life line as a safety precaution in case of an accident.

When all is ready the officer of the deck, or the officer in charge of the lowering, commands "**Lower away together.**" The bow and stroke oars tend to the falls to keep them clear and to keep the blocks from striking other members of the crew when let go. To keep the boat from swinging, frapping lines may be passed around the falls, the ends leading inboard, to hold the boat close in to the side as it is lowered. In some ships, jackstays with traveling lizards are fitted

from the davit head to the side of the ship. A turn of the lizard is taken under a thwart, or around the standing part of the fall, and the boat is held near the side, as by the frapping lines above described. Under no circumstances should the lizard be secured in the boat so that it could jam; the end must be held in the hand (See fig. 225.) Some of the men in the waist should breast the boat off the ship's side with the boat hooks being careful to hold the butt end above the outer gunwale to avoid danger of the boat being driven against it and its staving a hole in the planking.

When the boat is a short distance from the water the boat officer, or in his absence the coxswain, lets go the detaching apparatus or gives the command "Let go." If the boat is not fitted with the detaching apparatus, as soon as boat is water borne, the boat officer or coxswain commands "Let go the after fall," then, "Let go the forward fall." The coxswain gives the boat a sheer out. The greatest danger occurs at this instant, as there is always a danger of the boat being dashed against the ship's side. For that reason the coxswain should give the stern a sheer in with the steering oar or rudder to get the bow out. When clear of the ship's side the officer or coxswain directs the second bowman to cast off the sea painter; thwartmen get out their oars as soon as possible and the boat makes the best of her way to the rescue.

LOWERING A MOTOR WHALEBOAT

The general alarm and the method of handling the ship are the same as for a pulling lifeboat. Power is maintained on the cranes at all times at sea and tested hourly to insure readiness. A trained crane operator is on watch at all times. The crew of the motor whale

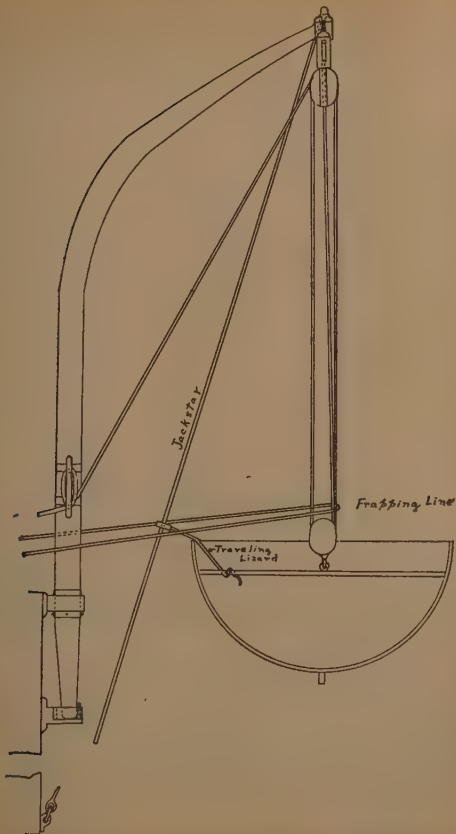


FIG. 225.—Use of traveling lizard and frapping line

boat consists of a coxswain, engineer, and bowman. In the event that an officer is not available to take charge, it is desirable to have an additional man in the boat crew to handle lines and to hook on.

The boatswain's mate on watch on the upper deck takes charge of lowering until relieved by a chief boatswain's mate or boatswain. The officer of the deck orders the motor whaleboat hoisted out. The crane takes a strain on the falls, the gripes are released, the steadying lines manned, the boat hoisted and swung out. The slack of the sea painter is taken in as boat swung out. The boat is lowered just clear of the water. When water borne the steadying lines are released, crane hook tripped, the boat sheered out, and the sea painter released. The boat proceeds to the rescue.

HOISTING A LIFEBOAT (OR OTHER BOAT) IN A SEAWAY

(1) The same general principles of seamanship apply as in lowering. It is preferable for a ship to have a little headway on in case she is under way. The important point is to keep the boat off the ship's side to prevent its being injured.

(2) The boat comes alongside, a lee having been made for her, and, in case of a heavy sea, oil being used freely. Oars are boated, before getting alongside, as soon as possible after receiving the sea painter, which should always be hove to her.

(3) The bowman seizes the sea painter and takes a turn around the forward thwart. The boat should then be hauled under the davits by manning the sea painter on deck.

(4) Frapping lines, traveling lizards, etc., will, if necessary, be used as in lowering. Similarly, thwart men will, by use of boat hooks, keep the boat from swinging against the ship's side.

(5) If the ship has considerable way on, a line should be led from the stern of the boat to a point well aft on the ship, to prevent the boat from lurching forward when she leaves the water.

(6) The boat falls should be well overhauled, led along the deck so that the men have a clear hauling space, and they must be well manned. The boat should never have to wait for preparations on deck.

(7) All being ready on deck, stand by, wait for a smooth time, hook forward falls first, then, after falls, haul taut, hoist away. Men should run away with the falls as the ship rolls toward the boat, which should be run up quickly but steadily. If the winch is used, the falls should be taken around the barrel, which should be turning at the desired speed before the order "Haul taut" is given.

(8) Boats fitted with automatic releasing hooks should have their falls rove continuous from davit head to davit head, and the blocks must be of sufficient size to permit the falls to render easily.

(9) In hoisting a motor whaleboat, sea painter and steadying lines are made ready to pass to the boat as it comes up under the crane. The crane hook is lowered clear of the heads of the crew. The tripping line is again used, this time to hook on the sling ring. When the steadying lines are secured, the tripping line is passed to the boat, roved through the sling ring, and then made fast to the eye of the safety runner. When a comparative calm exists, the ring is hooked on the crane fall from deck by means of a pull on the tripping line which draws the safety runner and the point of the hook through the ring. The boat engine is stopped and the boat hoisted in.

DUTIES OF COXSWAIN

(1) The coxswain of a boat should be perfectly familiar with everything relating to the care and handling of his boat and be competent to instruct his crew in all details of general service or drill.

(2) He is responsible to the officer in charge of the boat for its cleanliness and readiness for service, and he should constantly keep himself informed as to the condition and completeness of the boat equipment, reporting all deficiencies to the boat officer, or his division officer, or to the officer of the deck if these deficiencies would prevent him from making a trip.

(3) He is responsible for the appearance and behavior of his boat crew and that they always pull properly and conduct themselves in a seamanlike manner.

(4) Coxswains and boat crews should remember that they represent their ship, and they should therefore take a pride in their own appearance and in that of their boat. The efficiency and smartness of a ship's boats and boat crews generally reflect most clearly the tone of the ship.

(5) The coxswain is to be careful that his boat crew is always properly dressed, paying particular attention to the following points:

(a) Hats and caps properly worn, with ship's name square to the front, and no hair showing on the forehead below the hat or cap.

(b) That the brims of the white hats are never turned down unless necessary to shield the eyes from prolonged exposure to the sun.

(c) That trousers are never turned up, except in bad weather.

(d) That the men of the boat crew are dressed alike as regards oilskins, but oilskins are not to be worn unless it is actually raining.

(e) That all members of the crew are in uniform in regard to foot gear; that is, either that they all wear shoes or go barefooted.

(f) That in cold weather the men have their overcoats at hand.

(6) Owing to the constant use of power boats in port, and their consequent greater liability to become soiled, coxswains must devote particular attention to the neat and shipshape appearance of their boat and crew.

(7) The coxswain of a power boat is especially responsible that the crew and enlisted passengers sit down in their proper places, that they do not sit on the gunwale, and that the men outside the canopy conduct themselves in a seamanlike manner in extending salutes.

(8) Coxswains of power boats should devote particular attention to the proper handling of canopy curtains. When curtains are not required, they will be neatly rolled and stopped up, and when in use they will be neatly stopped down to the washboard. It is not shipshape to stop down one corner of a side curtain, but when running into a head sea the coxswain may frequently find it necessary to haul down the curtains on one side and leave them furled on the other. Under all circumstances, when the curtains are in use, they must be neatly stopped in place, as nothing is more slovenly than canopy curtains hanging loosely and flapping to the wind, but for safety a ready exit from the boat is essential.

(9) Coxswains of power boats must see that towels or clothing are never hanging in the boat when she is cast off for service.

(10) Coxswains of power boats will require the stern man to devote particular attention to the appearance of the stern sheets of the boat. Cushion covers shall be kept neat and clean, the lantern filled, trimmed, polished, and the globe cleaned so that it will give a bright light. The boat flag, when not in use, is to be kept neatly rolled on its flagstaff and triced up overhead, not hanging loosely from the flagstaff, where it presents a slovenly appearance and interferes with passengers. When a boat is called for the use of commissioned officers, the stern man will spread the boat cloth neatly in the stern sheets of the boat and see that the foot cloths, or ladder (if used), are on the proper side of the boat; that is, on the side it is expected that passengers are to enter.

(11) When boats are called away, coxswains will get in the boat over the boom, will see that the crew is ready in the boat and everything is ready, and then drop down to the gangway. The coxwain then reports to the officer of the deck, or to the boat officer, that the boat is at the gangway ready for service, and in the absence of a boat officer receives his orders, which he must make sure that he clearly understands.

(12) On his return to the ship he will report to the officer of the deck that orders have been complied with. He will also report anything amiss that is visible from outside the ship, such as wind sails that require trimming, anything hanging over the side, or clothing being in improper places. He will see his boat properly secured to the boom.

(13) The crew shall not be allowed to leave the boat on shore without proper authority. If necessary for any member to leave temporarily, the coxswain will report the fact to the officer of the deck immediately on his return to the ship.

(14) The coxswain shall never permit smoking in boats with gas engines, and in other boats only when special permission has been given.

(15) When boats are ordered to moor, they are to be reported "moored" by the coxswain to the officer of the deck.

Power boats—Special duties of coxswains.—(1) The coxswain of a power boat is responsible for the whole boat and for the discipline and obedience to regulations of all men in the boat.

(2) If anything is required about the engine, such as gasoline or lubricating oil, or if any repairs are required which necessitates temporarily disabling the boat, the engineer will report it to the coxswain, who will report to the officer of the deck.

(3) In overhauling the boat while in the cradles the same rule prevails; while the engineer will attend to the technical details of the work on the machinery, any assistance should be obtained by the coxswain, if necessary, by applying to the officer of the deck.

(4) The coxswain of a power boat should, as soon as possible, study his boat with the view of getting perfectly familiar with her. He should learn by practice the turning circle, the effect of the screw under different conditions; also the amount of fuel and oil usually carried, the maximum speed of the boat, the operating radius, and the amount of extra fuel and oil required to cover a given distance at the ordinary speed.

(5) Coxswains of boats must study carefully the Rules of the Road.

(6) In running in a fog, the coxswain should remember that owing to the presence of the machinery in the boat the compass will be affected. Hence, to get correct compass course it can not be taken from a chart but should be obtained by reading the compass when it is in its place for steering by it, and the boat is heading in the desired direction. Therefore on his very first trip in and out from a landing the coxswain should always use his compass, observe, and, if necessary, record the compass courses, so that he could make the trip either way in a fog.

(7) Knowledge of the effect of the screw on the steering is most essential. The right-handed screw when going ahead tends to throw the stern to starboard; when backing, to port. In other words, the stern is dragged around in the direction the propeller is turning. In turning a power boat, the rudder should be shifted when the direction of motion of the propeller is changed, for the rudder has the same effect on the boat when the propeller is backing, whether the boat itself is moving astern or is still forging ahead.

(8) The coxswains of boats must not overload them. The capacities of the most frequently used boats are as follows: 40-foot barge, 37 persons; 50-foot motor boat, 50; 40-foot motor boat, 37; 35-foot motor boat, 27; 26-foot motor boat, 18; 50-foot motor launch, 190; 40-foot motor launch, 90; 36-foot motor launch, 70; 30-foot motor launch, 50; 30-foot motor launch, 40; 21-foot motor launch, 19; 21-foot motor dory, 10.

NOTES ON POWER BOATS

(1) In making a landing it is a common mistake to keep too much headway on and rely on backing the engines full speed to stop the boat. This is poor seamanship, as the engine may fail to back promptly, causing a collision or smash up, and if it does back hard, unusual wear and tear are produced. Therefore make landings with low speed. This precaution applies particularly to motor boats where sudden reversals and hard backing put excessive strains on the engines and reversing gear, and will eventually result in breakdowns.

(2) In landing alongside a ship's gangway in a strong current, do not let the tide catch your boat on either bow. If it catches your boat on the inboard bow, it will sweep you around away from the gangway, whereas if the tide catches your boat on the outboard bow it may sweep your boat underneath the gangway. The boat line from forward should in all cases be used, the boat being kept off a little from the side until it is fast and then sheered in by the rudder. A boat may lie alongside with safety in a strong current with a line from the inner bow, and the rudder slightly over for sheering out.

(3) When running in a seaway, speed should be reduced somewhat not only to avoid shipping seas but to reduce the strain on the machinery due to the racing of the screw. In running into a sea it is possible by careful nursing to make fair speed, watching the seas and slowing or even stopping for a moment as heavy ones are seen bearing down upon the boat. If the man who is running the engine has sufficient experience to

regulate the speed in this way, it is convenient to leave this to him, if he can see ahead. If running more or less across the sea, it is well to head up momentarily for a heavy wave. This should be done also when a fast motor boat passes you.

(4) There should always be a lantern, filled and trimmed, in the boat, and boats should never leave the ship for a trip of any great length without a compass. Weather is liable to thicken at any time, and a boat without a compass would have difficulty in reaching a landing or returning to the ship. For this reason boat officers and coxswains of running boats should at all times know the compass course between the ship and the landing; and if they are away from the ship and it begins to thicken, they should at once observe the compass course before the ship is shut in.

(5) At sea no boat should ever leave the ship without a compass, water, and provisions, and, excepting lifeboats, all boats sent away from a ship at sea carry rifles and ammunition.

(6) Never go alongside a vessel which has sternway or which is backing her engines.

(7) In coming alongside in a seaway or when a strong tide is running, warn the bowman to look out for the boat line from the ship.

(8) If caught in a gale in an open boat, rig a sea anchor by lashing the spars and sails together, sails loosed. Fit a span to this and ride by the painter. If there is oil in the boat, secure a bag of it to the sea anchor, or use oil over both bows. (See fig. 226.)

(9) Boat crews are always to man their boats over the boom, and all the crew should be in the boat in about one minute after the pipe or call. The crews of running boats should remain on deck near lower boom

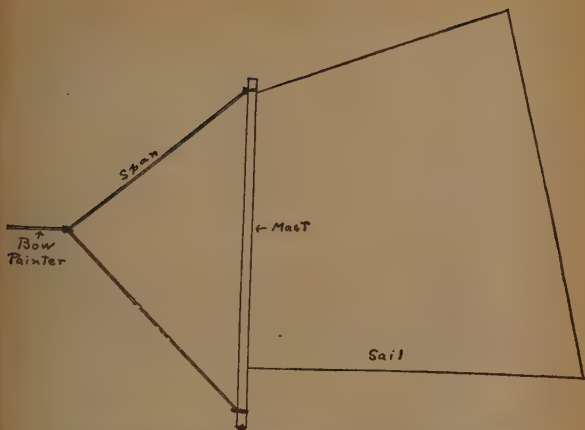


FIG. 226.—Mast and loosened sail used as sea anchor

waiting for a call. A boat should never require longer than three minutes after being called away before reporting ready to shove off from the gangway.

(10) The practice of cutting close across the bow or stern of a ship, under lower booms, or around points of land, is to be avoided.

(11) No one except the coxswain and boat officer is ever to be permitted to sit abaft the backboard.

RUNNING A LINE

When a large ship is to take another big ship in tow it is necessary to provide some way to pass over the heavy towing hawsers and the other cumbersome lines that go along with it. This transfer is accomplished

by means of small lines, and the process is called "running a line."

The first and easiest method is the case when the two ships can maneuver close enough to put a small line directly across to the other ship. Under these circumstances a light fishline can be used. Attach to this line a weight of such size that it can be thrown by hand. The line is faked down on deck and the weight is hurled by hand across to the other ship. The larger lines are then bent on to this one and sent over.

When the above method can not be adopted the first line (about a 3-inch line) is sent over by boat. This 3-inch line, called a messenger, is coiled up in the stern sheets of the boat that is to carry it. One end of course, is kept on the ship. After the boat is lowered it proceeds to the other ship, paying the line out as it goes.

In very rough weather it is not practicable to use a boat. In this case the messenger is floated over to the other ship. A good length of this line is secured to casks, life belts, or a spar, which is then towed across the bow of the ship to be towed. The tow can then pick it up without much trouble. The ship to be towed, however, may put this line over astern and have the towing ship pick it up.

After the messenger is gotten aboard, a heavier line is bent on and hauled across until finally the towing hawser is sent over.

Many ships carry a special line-throwing gun. This is a small rifle with which a light line can be shot over to the other ship. Still another way of shooting a line over is to use an ordinary rocket. Attach to the rocket a small fishing line over 200 feet long. The rocket

should be given about 45° elevation and fired. Before firing care must be taken that the line is faked down on deck, entirely clear for running and one end made fast on board. The other end is attached to the stick of the rocket near the end.

RUNNING A MOORING LINE TO A DOCK

This is usually done in a power boat. Coil most of the line in the stern of the boat. Run the boat at a slow speed. As the boat leaves the ship pay out the line from the boat. It is a good plan to pay out at first more line than necessary in order to get the boat headed right before any strain of towing interferes with steering. Be ready to cut the line in any emergency. If the mooring line is to be made fast to a bollard, put a bow line in the end of it and to this end make fast a heaving line. When the boat has neared the dock throw the heaving line to a man on the dock, or if there is none there land the boat and send a man ashore with the line. When the line is secured on the dock notify the ship that it is all fast.

With a heavy tide with you it is not necessary to carry so much line in the boat. However, when the tide is against you and the boat is not powerful it is better to take all the line in the boat, make it fast ashore and carry the free end back to the ship.

ABBREVIATED RULES FOR COXSWAINS

- (1) **Always—**
 - (a) See required equipment in boat.
 - (b) Have key to boat box in boat before leaving ship.
 - (c) See boat and boat gear clean and shipshape.
 - (d) See crew in uniform.

(e) See that oarsmen use oars assigned to their thwarts.

(f) Require crew to maintain silence.

(g) Rise and salute superior officers when they enter and leave the boat.

(h) See that enlisted men who are passengers in the stern sheets rise and salute commissioned officers when they enter the boat.

(i) In getting up, tossing, boating oars, etc., see that men handle oars smartly, with arm muscles, keeping body as erect as possible.

(j) Always give commands in a clear, sharp, and distinct voice.

(k) Give preparatory commands, when they are necessary to prevent taking the crew by surprise.

(l) Give commands at proper period of stroke—that is, when the blade is in the water near the beginning of the stroke.

(m) Require the crew to pull a strong, regular stroke, using the back.

(n) Require crew to feather their blades.

(o) When laying on oars, see that the crew sit up right, with hands on oar handles, blades trimmed horizontal.

(p) Keep boat bows on to a heavy sea.

(q) Watch the ship for signals.

(r) Obey boat recall as soon as made out. (Keep signal plate showing boat recall and boat number fastened in boat.)

(s) See fenders over the side when coming alongside a gangway or landing.

(t) See sheets tended while under sail.

(u) See sails well set and trimmed.

(v) Reef in time.

(w) See that every duty in a boat is done in a quick, seamanlike manner.

(x) Correct every infraction of regulations the moment it occurs.

(y) In hoisting the boat, hook the forward fall first.

(z) Report immediately on return to the ship any damage to boat or loss of boat gear or equipment and circumstances attending same.

(2) **Never—**

(a) Belay a sheet while sailing.

(b) Attempt to gybe a main boom in a fresh breeze.

(c) Stow away boat flag when wet; colors will fade.

(d) Unhook the forward fall first in lowering.

(e) Have after fall hooked when forward one is unhooked.

(f) Carry heavy weights in extreme ends of boats.

(g) Go over a ship's gangway to or from a boat when colors are hoisted without saluting.

(h) Allow talking in a pulling boat while under way.

(i) Allow the men to leave the boat at landing without proper permission.

(j) Lie alongside shore landing longer than is required to land.

(k) Pass a senior boat without permission.

(l) Steer with rudder in a heavy sea if steering oar is fitted.

(m) Land through surf unless expert in doing so or absolutely necessary.

(n) Leave boat after it is capsized until rescued.

(o) Permit the crew to lounge when laying on oars.

(p) Permit any member of crew to stand on thwarts or sit on the gunwale.

(*q*) Permit any member of crew to climb a mast if necessary.

(*r*) Permit towels or clothing to be hung up in duty boat.

(*s*) Jamb a tiller down too suddenly or too far.

(*t*) Use metal end of boat hook on side or paintwork.

CARRYING STORES

(1) When carrying provisions be careful not to break the oars by letting stores fall on them. Keep all casks "bung up" and leave a space, or "well," abaft the after thwart for bailing the boat out.

(2) Have tarpaulins for covering bread or anything that will be injured by salt water or rain.

(3) Do not take too heavy a load for the weather you may have to encounter.

(4) Do not overload a boat, particularly with men, as it may result in loss of life. When carrying treasure always attach a buoy, with a drift line at least equal to the greatest depth of water on the route to be taken.

(5) Never put heavy weights in the end of the boat. Stow the stores so as to keep the boat on an even keel and stow the stores so they can not shift as the boat rolls.

TOWING

(1) Though it is frequently impracticable, it is always preferable for the towing boat to give the tow painter (instead of vice versa), which the tow should tend and keep ready for letting go in an instant. If this is not done and the tow gives the towing boat her bow painter, which is shackled in the bow, a hatchet or sharp knife should be kept at hand in the towed boat for cutting the towline in an emergency.

(2) The towline should be passed when the towing boat is nearly ahead. The bowman in the latter boat hauls in this line and secures it in the bow of the tow. The towing boat then goes ahead slowly, so that when the slack is taken up a strain will be gradually put on the line. As soon as there is a strain the boat can proceed at its normal speed.

(3) In towing, the stern of the towing boat should be kept well down by shifting weights aft if necessary. This keeps the propeller well immersed and gives it a good hold on the water.

(4) When being towed astern of a large vessel, use a short scope, so as to remain close under the counter, with the bow partly out of the water. In casting off, when there are other boats towing astern, be careful before letting go either to drop clear of them with your towline, or be handy with your rudder and oars to avoid getting athwart the hawser of some of them.

(5) Except in the case of unladen boats in smooth water, a number of boats should never be towed tandem by their painters, for in a large tow this brings a considerable strain on stem and stern timbers of the foremost boats. To avoid this strain, the towing vessel should pay out sufficient line to reach the bow of the last boat, the other boats being secured to it by slip lines at bow and stern.

(6) If towing alongside, have the towline from as far forward on the towing boat as possible; either toggle it to the forward thwart (steadying it over the stem with a bight of the painter), or pass it through the forward rowlock on the side nearest the towing boat. Do not steer unless the rudder of the towing boat is insufficient. Pay particular attention to the steering.

RECREATION PARTIES

In a recreation boat party the senior line petty officer should act as coxswain. He is responsible for the observance of the following regulations:

- (1) There is no smoking in boats with gas engines.
- (2) The men do not sit on the gunwale.
- (3) All the members are in proper uniform.
- (4) All necessary salutes are rendered.
- (5) No landing is made and that no one leaves the boat unless permission has been previously given.
- (6) All the orders from the officer of the deck are obeyed.
- (7) If in a sailing party, the coxswain must make due allowance for an adverse wind, current, or tide in the distance he sails away from the ship in order that he may return on time.
- (8) The boat keeps a sharp lookout for recall from the ship and returns without delay when the same is made.
- (9) Every care is taken for the safe navigation of the boat.
- (10) The boat returns at the first sign of a storm. If caught in a storm the coxswain should use his discretion as to whether it is safe to anchor until the storm has passed over or to proceed through it.
- (11) No articles are taken aboard prohibited regulations, such as intoxicating drinks, firearms, etc. Sometimes the latter are allowed by special permission.
- (12) The boat and its equipment are not injured through negligence.
- (13) Upon the return of the boat a report is made to the officer of the deck. Any damage to the boat, articles damaged, articles missing, absentees, or other

casualties should also be reported to the officer of the deck.

In other recreation parties such as swimming, athletic, and visiting parties the man in charge is designated. He is responsible for the behavior of the members and they are under his orders. He is given definite orders for their uniform, time to return, places allowed to be visited, and such other information as necessary.

GASOLINE SAFETY PRECAUTIONS

(1) **Smoking.**—No smoking or naked lights shall be permitted in power boats.

(2) **Fueling.**—

(a) No transference of gasoline to a boat from a drum or other container will be made unless the container has been removed from the proximity of other containers. An adapter shall be provided with a screw thread that will fit the opening in a standard gasoline drum, the other end to take a standard $1\frac{1}{4}$ -inch metallic hose.

(b) Gasoline power boats will not fuel except when in the water and with the engines stopped, and, where possible, near enough to the ship to receive aid in case of emergency.

(c) Ship's boats may fuel from the bow, amidships, or astern, clear of other boats, depending upon the arrangements, and no smoking or naked lights (such as oil lanterns, candles, open flames, etc.) will be permitted in the vicinity while fueling.

(d) To avoid danger of ignition by the spark from a static charge of electricity, funnels and metallic filling hose will be grounded by making metallic contact on

the tank at a safe distance from the filling hole and maintaining metallic contact while fueling. No filtering material other than wire gauze shall be used for straining gasoline.

(e) Except in emergencies, boats shall not be fueled at night.

(f) The same general precautions must be observed when fueling from shore fueling stations.

(3) (a) **Bilges** shall be kept dry and frequently washed out to clear them of gasoline and oil. They should be washed before hoisting into the boat skids. The majority of gasoline fires are due to presence of gasoline and oil in the bilges.

(b) Bilges should be ventilated several times a day by removing the bottom boards for a few minutes for that purpose. When practicable, bottom boards of boats in skids should be left up for ventilation.

(4) **Electric wiring** shall not be permitted in the bilges. Care shall be exercised to reduce sparks to a minimum. Sparks may be caused by a static charge of electricity, short circuits in electric wiring, ground striking metal with hand tools, striking of shoe nails on metal, opening and closing switches, etc. The battery box will be located outside of a closed engine compartment and should be provided with a suitable water-tight cover. All naked terminals shall be insulated.

(5) The carburetor drip pan must be kept in place and the wire gauze shall be kept clean. Gasoline shall not be allowed to accumulate in the drip pan and must be frequently emptied.

(6) **Wire-gauze flame protectors** installed over openings in the carburetor air-intake pipe and crank-cas-

breather connection to carburetors shall be kept in place, intact, and clean.

(7) Tank filling plugs shall be habitually kept in place when not fueling.

(8) No repairs involving the application of heat shall be made until the container or tank has been emptied of gasoline, completely filled with water and emptied, and then blown through with air or live steam until all traces of gasoline fumes have been eliminated.

(9) Clothing and cleaning rags.—Keep engine room clear of clothing. Cleaning rags and waste will be kept in a closed container and burned after use. Clean engines, engine rooms, and bilges are the requisites of an efficient power-boat engineer.

(10) Inspection after hoisting.—The engineer of the boat will make a thorough inspection of the machinery when securing in the boat skids and report to the officer in charge the conditions found and the repairs required.

(11) Overhaul.—Before doing any work inside the boat, on the hull, or machinery, the bilges will be thoroughly ventilated, cleared of any gasoline vapor present, and all gasoline leaks from whatever source stopped.

TO EXTINGUISH A GASOLINE FIRE

The proper procedure in extinguishing a gasoline fire is as follows:

(a) Use either carbon-tetrachloride or acid-soda types of fire extinguishers.

NOTE.—The acid soda is injurious to electrical equipment and should not be unnecessarily played on it.

(b) Smother the fire if possible by means of wet blankets, mattresses, or similar material. If the fire is in a closed compartment, seal it to prevent access of air.

(c) In an incipient or small fire, sand is effective.

(d) Water is effective in extinguishing gasoline fire under the following conditions:

1. To sweep flames on the water away from a ship or dock.

2. To flood completely a compartment on fire.

3. When it can be supplied with sufficient pressure and volume to have a smothering effect.

NOTES ON PULLING BOATS

(1) In going into a crowded or difficult landing, pull easily and keep the boat under control with the oars as long as possible, laying on oars if necessary, and using boating oars only at the last moment.

(2) In going through a short narrow entrance, get a good way on the boat, then trail or toss the oars.

(3) Remember that a loaded boat holds her way much longer than a light one.

(4) In pulling across a current, try to get a range of two objects in line and steer by these to avoid being set down by the current.

(5) Boat crews are to pull a smart, steady stroke at all times. The first part of the stroke is to be pulled with straight back and arms, keeping eyes always in the boat, body to move directly to the front and rear. Always use the back in pulling.

(6) When laying on oars, they must be horizontal with blades feathered and the boat crew sitting upright with both hands on the handle of the oar. Lounging on the oars must not be permitted.

(7) When oars are tossed, they must be held vertically, with blades in fore-and-aft plane, handles of oars on bottom boards, the wrist of the inboard hand resting on the thigh, outboard grasping loom at height of chin, crew sitting upright.

(8) In tossing after the command "Way enough," oars are tossed to an angle of 45° and then carefully and quietly boated.

CARE AND CLEANING OF BOATS

(1) The coxswain is responsible that his boat and all that belongs to it is kept in good order. He is responsible that his boat davits are clean, and is to report if any gear connected with them is not in good order.

(2) Care is necessary to see that the oars are properly coppered, leathered, and marked, that they are of the correct length, and are assigned to proper thwarts. Care should be taken at all times with the blades of the oars, as they are easily split or broken by rough handling or by stepping on them.

(3) Ensigns, pennants, staves, and trucks demand careful attention; also trailing lines, rowlock lanyards, boat hooks, and the boat equipment.

(4) Coxswains are always to be present when their boats are being lowered, hoisted, or moored.

(5) Immediately after a boat is hoisted, the coxswain is to see her squared by the falls, dried out, boat gear neatly stowed, the outside cleared of all marks, the plug out (except in lifeboats at sea), and secured close to the plug hole with a lanyard. When the ship is at sea, lifeboats will habitually keep their boat plugs in.

BOAT SALUTES AND BOAT ETIQUETTE

Salutes shall be exchanged between boats meeting or passing each other, as indicated in the table on page 751.

The junior shall always salute first, and the senior shall return the salute with the hand.

In boats fitted with swivel rowlocks, oars shall trail in all cases, instead of being tossed. Such boats shall always have the oars secured by trailing lines.

In power boats, engines are to be stopped in all cases in which pulling boats toss, trail, or lay on oars, except as noted at bottom of page.

In laden boats, towing boats, or boats under sail, make the hand salute only on all occasions.

Officers not having their distinctive flag or pennant flying will receive the hand salute only, whether they are in uniform or civilian clothes.

Coxswains in charge of boats rise and salute when officers enter or leave their boats; also when their boats are saluting commissioned officers in other boats returning a salute from them; but when steering a loaded or towing boat, or a boat under sail, they shall not rise, but shall salute with the hand only.

Enlisted men who are passengers in the stern sheet of a boat shall always rise and salute when a commissioned officer enters or leaves the boat.

Juniors always get into a boat ahead of, and leave after, their seniors, unless the senior officer in the boat gives orders to the contrary.

As a general rule the seniors take the seats farthest aft; juniors shall leave such seats for their seniors.

At morning or evening colors, boats passing near a United States naval vessel, or when lying off a foreign man-of-war, shall salute as follows:

Pulling boats by laying on oars and power boats by slowing their engines and throwing their clutches out of gear. Coxswains of the boats shall stand and salute, and members of a power boat's crew outside of the canopy shall stand facing toward the colors and salute.

Rank of the senior officer in the boat to be saluted

Rank or rate of the senior in the saluting boat	Flag or general officer, with flag flying	Commanding officer, above rank of lieutenant (with pennant flying)	Other commissioned officers	Midshipman or warrant officer
Flag or general officer	Junior salutes with hand.	Junior salutes with hand.		
Commanding officer above rank of lieutenant (with pennant flying).	Stops engine, lays on oars, and salutes with hand.	Junior salutes with hand.		
Other naval officer below flag rank and above rank of lieutenant, and marine officers of corresponding rank.	When meeting a senior commanding officer, or immediate commanding officer, stops engine, lays on oars, and salutes with hand.	Stops engine, lays on oars, and salutes with hand.	Junior salutes with hand.	
Other commissioned officers.	Stops engine, tosses or trails oars, and salutes with hand.	Stops engine, lays on oars, and salutes with hand.	do.	
Midshipman or warrant officer.	Salutes with hand.	Salutes with hand.	Salutes with hand.	Junior salutes with hand.
Officer and corswain in loaded or towing boat, or boat under sail.			Junior salutes with hand.	Do.
Corswain	Stops engine, tosses or trails oars, stands, and salutes with hand.	Stops engine, lays on oars, stands, and salutes with hand.	Stands and salutes with hand.	Salutes with hand.

When a power boat salutes another boat in passing or when it passed a ship that parades a guard or otherwise salutes an officer in the boat, the members of the crew outside the canopy shall stand at attention, facing the boat or vessel.

Similarly, if the boat is carrying an officer for whom a salute is being fired, men outside the canopy shall stand at attention, facing the saluting ship. The engines are stopped at the first gun, and the boat heads in the same direction and parallel to the saluting ship.

Boatkeepers and all other men in boats that are under way and not carrying an officer—i. e., at the boom or at a landing—shall, when boat awnings are not spread, stand and salute when an officer comes alongside, leaves the side, or passes near them, and shall remain standing until the boat passes or reaches the ship's side. If boat awnings are spread, they shall sit at attention, and salute with the hand without rising.

Men working on the ship's side do not salute, but continue their work, except when the bugle sounds to call "Attention."

Salutes shall be extended to foreign military or naval officers, or officers of our own Army, Marine Corps, Naval Reserve, Naval Militia, or Coast Guard, in the same manner as to United States naval officers of corresponding rank. This rule applies alike afloat and ashore.

No junior shall ever pass a senior in a boat going the same direction without first obtaining permission to do so.

The position of attention in a boat is sitting erect in the thwart or in stern sheets.

At landing places officers are saluted by the crew of a pulling boat sitting at attention, and by the coxswain rising and saluting with the hand.

Enlisted men who are passengers in running boats which contain officers shall maintain silence.

Boats at landings shall always show deference and respect to boats of other ships of our own or of a foreign service. Coxswains shall remember that landings are for the use of all, that they should exercise patience and forbearance in awaiting their turn to go alongside, and when alongside they should give way for other boats as soon as possible. In such cases, boats carrying seniors should be given the opportunity to land first, and officers shall be saluted and in every way treated with the deference and respect due their rank.

It should be remembered that boats at a landing come more intimately into contact with officers and men from other ships than at any other place; therefore a strict observance of all courtesies by a boat crew will reflect credit upon the ship. If a doubt exists about the rank of an officer in a boat, it is preferable to salute rather than risk neglecting to salute one who is entitled to that courtesy.

Boats are not to lie alongside a gangway or landing place, but are to lie off while waiting. In case a long wait is probable, in bad weather, or at night, permission may be asked to make fast to a boom; also for the crew to come on board.

Small gear should not be left in boats which remain at the boom after sunset, as otherwise it may be stolen by passing shore boats.

When a visiting party goes alongside, the petty officer in charge thereof shall go on board and obtain permission before allowing any of the visiting party

to leave the boat. If permission is granted, he allows the party to come on board, each one saluting, if colors are hoisted, as he crosses the gangway. If the boat is to wait, it shoves off and lies off the quarter, as above mentioned, unless the officer of the deck gives permission for it to haul out to the boom. The regular crew will remain in the boat unless the officer of the deck gives it permission to come on board.

Except when there is a special countersign, the answering hail from a boat in reply to a ship's hail shall be varied according to the senior officer or official who may be in the boat, as follows:

President of the United States.....	United States.
Secretary or Assistant Secretaries of the Navy.....	Navy.
Flag officer in chief command.....	Fleet.
Chief of staff (when not in command of a ship).....	Staff.
Force commander.....	Force (giving name of force).
Squadron commander.....	Squadron (giving name of Squadron).
Division commander.....	Division (giving number of his division).
Marine officer commanding a brigade.....	Brigade commander.
Commanding officer.....	The name of the ship under his command.
Marine officer commanding regiment.....	Regimental commander.
Other commissioned officers.....	Aye, aye.
Other officers.....	No, no.
Enlisted men and marines.....	Hello.
Boats not intended to go alongside regardless of rank of passengers.....	Passing.

Power boats approaching a ship when flag or pennant is not displayed in the bow, or at night, or during the day when the curtains are so drawn that the ranks of the passengers can not be distinguished, may sound short blasts of the whistle, as follows:

President of the United States.....	8
Secretary of the Navy.....	7
Assistant Secretaries of the Navy.....	5
Admiral.....	6
Vice admiral.....	5
Other flag officer.....	4
General officer, Marine Corps.....	4
Commanding officer, chief of staff.....	3
Marine officer commanding a brigade or regiment.....	3
Other commissioned officers.....	2
All others.....	1

Boat ensigns are not to be used for boats to which they do not belong, and the insignia on the head of the pennant staff and flagstaff shall be prescribed for the rank of the officer to which it belongs. The insignia on the head of the pennant staff and flagstaff are identical and are as follows:

President.....	Spread eagle.
Flag officer.....	Gilt lance head.
Cabinet officers with personal flags.....	Gilt lance head.
Captain.....	Gilt ball.
Commander.....	Gilt star.
Lower rank.....	Flat truck.

Whenever any of the following-named officials is regularly embarked on board a ship of the Navy, but is absent therefrom at night with intention to return within 24 hours, his absence shall be indicated by the number of lights herein indicated displayed at the peak, one above the other:

President of the United States.....	8 white lights.
Secretary of the Navy.....	6 white lights.
Assistant Secretaries of the Navy.....	4 white lights.
Admiral.....	5 white lights.
Vice admiral.....	4 white lights.
Rear admiral.....	3 white lights.
Captain appointed to command a force, squadron, or division other than destroyer division, sub- marine, submarine chasers, etc.....	3 white lights.

Commander of a division of destroyers, submarines, submarine chasers, etc. (not a flag officer) ----- 1 white light
 Captain of a ship (not shown if any of the above lights are displayed) ----- 1 white light

Every flagship when in port, or when at sea in company with other ships, shall carry two white lights a horizontal line 6 feet apart, using outriggers, necessary, on the after side of the mainmast and ab 6 feet below the absentee lights.

INLAND RULES

PRELIMINARY DEFINITIONS

In the following rules every steam vessel which under sail and not under steam is to be considered sailing vessel, and every vessel under steam, whether under sail or not, is to be considered a steam vessel.

The words "steam vessel" shall include any vessel propelled by machinery.

A vessel is "under way," within the meaning of the rules, when she is not at anchor, or made fast to shore, or aground.

LIGHTS, ETC.

The word "visible" in these rules, when applied to lights, shall mean visible on a dark night with a clear atmosphere.

ARTICLE 1. The rule concerning lights shall be complied with in all weathers from sunset to sunrise, and during such time no other lights which may be mistaken for the prescribed lights shall be exhibited.

STEAM VESSELS—MASTHEAD LIGHTS

ART. 2. A steam vessel when under way shall carry—

(a) On or in front of the foremast, or if a vessel is without a foremast, then in the fore part of the vessel, a bright white light * * * so fixed as to throw the light 10 points on each side of the vessel, namely, from right ahead to two points abaft the beam on either side, and of such a character as to be visible at a distance of at least 5 miles.

STEAM VESSELS—SIDE LIGHTS

(b) On the starboard side a green light * * * so fixed as to throw the light from right ahead to two points abaft the beam on the starboard side, and of such a character as to be visible at a distance of at least 2 miles.

(c) On the port side a red light * * * so fixed as to throw the light from right ahead to two points abaft the beam on the port side and of such a character as to be visible at a distance of at least 2 miles.

(d) * * * (See cut 1, Pl. VIII.)

STEAM VESSELS—RANGE LIGHTS

(e) A seagoing steam vessel when under way may carry an additional white light similar in construction to the light mentioned in subdivision (a). These two lights shall be so placed in line with the keel that one shall be at least 15 feet higher than the other and in such a position with reference to each other that the lower light shall be forward of the upper one
* * *

(f) * * * (See cuts 2 and 4, Pl. VIII.)

STEAM VESSELS—WHEN TOWING

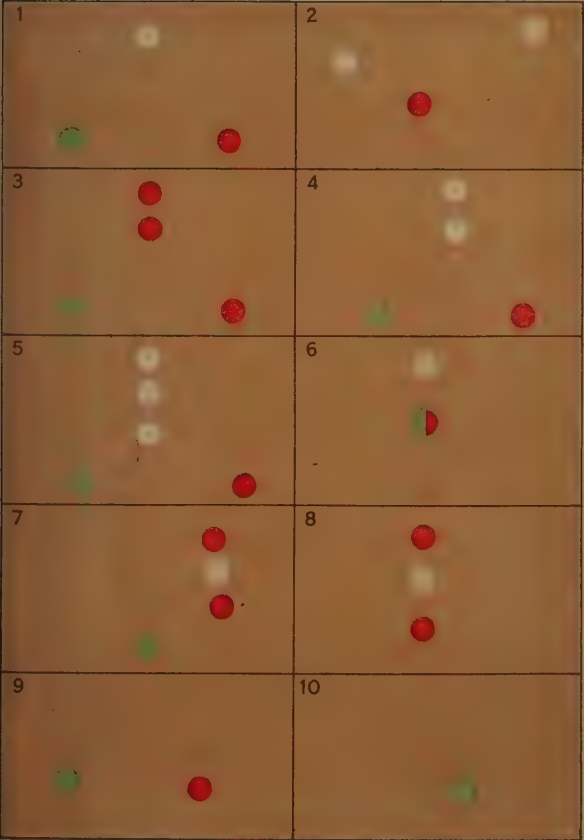
ART. 3. A steam vessel when towing another vessel shall, in addition to her side lights, carry two bright white lights in a vertical line one over the other, not less than 3 feet apart, and when towing more than one vessel shall carry an additional bright white light 3 feet above or below such lights, if the length of the tow measuring from the stern of the towing vessel to the stern of the last vessel towed exceeds 600 feet.
* * *. (See cuts 4 and 5, Pl. VIII.)

LIGHTS FOR SAILING VESSELS AND VESSELS IN TOW

ART. 5. A sailing vessel under way or being towed shall carry the same lights as are prescribed by article 2 for a steam vessel under way, with the exception of the white lights mentioned therein, which they shall never carry. (See cuts 9 and 10, Pl. VIII.)

LIGHTS CARRIED BY VESSELS

1. Steamship under way, bows on (art. 2 (a), (b), (c), and (d)).
2. Steamship under way passing from starboard to port (art. 2 (e)).
3. Steamship under way not under control (art. 2 (a), Int. Rules).
4. Steamship towing—length of tow less than 600 feet (art. 3). Steamship—head on (art. 2 (e)).
5. Steamship towing two ships—length of tow over 600 feet (art. 3).
6. Steam vessel under 40 tons (art. 7, Int. Rules).
7. Telegraph ship under way passing from port to starboard (art. 4 (b), Int. Rules).



8. Telegraph ship not making way through the water art. 4 (*c*), Int. Rules).
9. Sailing vessel, bows on (art. 5).
10. Sailing vessel passing port to starboard (art. 5).
11. Steam pilot vessel on duty, bows on under way art. 8).
12. Steam pilot vessel on duty but not under way art. 8).
13. Sailing pilot vessel (art. 8).
14. Vessel aground in or near a fairway (arts. 4 and 1, Int. Rules).
15. Steam trawler under way, bows on (art. 9 (*d*), Int. Rules).
16. Drift net fishing vessel (art. 9).
17. Line fishing vessel—outlying tackle over 150 feet (art. 9).
18. Vessel at anchor over 150 feet long (art. 11).
19. Vessel being overtaken (art. 10). Vessel at anchor under 150 feet long (art. 11). Rowing boats under oars or sails (art. 7).
20. Sailing trawler, 20 tons and upward (art. 9 (*d*), Int. Rules).

LIGHTS FOR SMALL VESSELS

ART. 6. Whenever, as in the case of vessels of less than 10 gross tons under way during bad weather, the green and red side lights can not be fixed, these lights shall be kept at hand, lighted and ready for use; and shall, on the approach of or to other vessels, be exhibited on their respective sides in sufficient time to prevent collision, in such a manner as to make them most visible, and so that the green light shall not be seen on the port side nor the red light on the starboard side; nor, if practicable, more than two points abaft the beam on their respective sides * * *.

ART. 7. Rowing boats, whether under oars or sail, shall have ready at hand a lantern showing a white light which shall be temporarily exhibited in sufficient time to prevent collision. (See cut 19, Pl. IX.)

LIGHTS FOR AN OVERTAKEN VESSEL

ART. 10. A vessel which is being overtaken by another, except a steam vessel with an after range light showing all around the horizon, shall show from the stern to such last-mentioned vessel a white light or flare-up light. (See cut 19, Pl. IX.)

ANCHOR LIGHTS

ART. 11. A vessel under 150 feet in length when at anchor shall carry forward, where it can best be seen, * * * a white light, in a lantern so constructed to show a clear, uniform, and unbroken light visible all around the horizon at a distance of at least 1 mile.

A vessel of 150 feet or upward in length when at anchor shall carry in the forward part of the vessel * * * one such light, and at or near the stern of the vessel, and at such a height that it shall be not less than 15 feet lower than the forward light, another such light. (See cuts 18 and 19, Pl. IX.)

SOUND SIGNALS FOR FOG, ETC.

PRELIMINARY

ART. 15. All signals prescribed by this article for vessels under way shall be given:

1. By "steam vessels" on the whistle or siren.
2. By "sailing vessels" and "vessels towed" on fog horn.



The words "prolonged blast" used in this article shall mean a blast of from four to six seconds' duration * * *.

In fog, mist, falling snow, or heavy rainstorms, whether by day or night, the signals described in this article shall be used as follows, namely:

STEAM VESSELS UNDER WAY

(a) A steam vessel under way shall sound, at intervals of not more than one minute, a prolonged blast.

SAIL VESSELS UNDER WAY

(c) A sailing vessel under way shall sound, at intervals of not more than one minute when on the starboard tack, one blast; when on the port tack, two blasts in succession; and when with the wind abaft the beam, three blasts in succession.

VESSELS AT ANCHOR OR NOT UNDER WAY

(d) A vessel when at anchor shall, at intervals of not more than one minute, ring the bell rapidly for about five seconds.

VESSELS TOWING OR TOWED

(e) A steam vessel when towing, shall, * * * at intervals of not more than one minute, sound three blasts in succession, namely, one prolonged blast followed by two short blasts. A vessel towed may give this signal and she shall not give any other.

(f) * * * ■.

SPEED IN A FOG

ART. 16. Every vessel shall, in a fog, mist, falling snow, or heavy rainstorms, go at a moderate speed having careful regard to the existing circumstances and conditions.

A steam vessel hearing, apparently forward of her beam, the fog signal of a vessel the position of which is not ascertained shall, so far as the circumstances the case admit, stop her engines, and then navigate with caution until danger of collision is over.

STEERING AND SAILING RULES

SAILING VESSELS

ART. 17. When two sailing vessels are approaching one another so as to involve risk of collision, one of them shall keep out of the way of the other as follows, namely:

(a) A vessel which is running free shall keep clear of the way of a vessel which is close-hauled.

(b) A vessel which is close-hauled on the port tack shall keep out of the way of a vessel which is close-hauled on the starboard tack.

(c) When both are running free, with the wind on different sides, the vessel which has the wind on the port side shall keep out of the way of the other.

(d) When both are running free, with the wind on the same side, the vessel which is to the windward shall keep out of the way of the vessel which is to the leeward.

(e) A vessel which has the wind aft shall keep clear of the way of the other vessel.

STEAM VESSELS

ART. 18. *Rule I.*—When steam vessels are approaching each other head and head—that is, end on, or nearly so—it shall be the duty of each to pass on the port side of the other; and either vessel shall give, as a signal of her intention, one short and distinct blast of her whistle, which the other vessel shall answer promptly by a similar blast of her whistle, and thereupon such vessels shall pass on the port side of each other. But if the courses of such vessels are so far on the starboard side of each other as not to be considered as meeting head and head, either vessel shall immediately give two short and distinct blasts of her whistle, which the other vessel shall answer promptly by two similar blasts of her whistle, and they shall pass on the starboard side of each other.

Rule III.—If when steam vessels are approaching each other either vessel fails to understand the course or intention of the other, from any cause, the vessel so in doubt shall immediately signify the same by giving several short and rapid blasts, not less than four, of the steam whistle.

Rule V.—Whenever a steam vessel is nearing a short bend or curve in the channel where, from the height of the banks or other cause, a steam vessel approaching from the opposite direction can not be seen for a distance of half a mile, such steam vessel, when she shall have arrived within half a mile of such curve or bend, shall give a signal by one long blast of the steam whistle, which signal shall be answered by a similar blast given by any approaching steam vessel that may be within hearing. Should such signal be so answered by a steam vessel upon the farther side of such bend,

then the usual signals for meeting and passing shall immediately be given and answered. * * *

When steam vessels are moved from their docks or berths, and other boats are liable to pass from any direction toward them, they shall give the same signals as in the case of vessels meeting at a bend, but immediately after clearing the berths so as to be fully in sight, they shall be governed by the steering and sailing rules.

Rule VIII.—When steam vessels are running in the same direction, and the vessel which is astern shall desire to pass on the right or starboard hand of the vessel ahead, she shall give one short blast of the steam whistle as a signal of such desire; and if the vessel ahead answers with one blast, she shall put her helm to port [right rudder]; or if she shall desire to pass on the left or port side of the vessel ahead, she shall give two short blasts of the steam whistle as a signal of such desire; and if the vessel ahead answers with two blasts, shall put her helm to starboard [left rudder]; or if the vessel ahead does not think it safe for the vessel astern to attempt to pass at that point, she shall immediately signify the same by giving several short and rapid blasts of the steam whistle, not less than four, and under no circumstances shall the vessel astern attempt to pass the vessel ahead until such time as they have reached a point where it can be safely done, when said vessel ahead shall signify her willingness by blowing the proper signals. The vessel ahead shall in no case attempt to cross the bow or crowd upon the course of the passing vessel.

TWO STEAM VESSELS CROSSING

ART. 19. When two steam vessels are crossing, so as to involve risk of collision, the vessel which has the

other on her own starboard side shall keep out of the way of the other.

STEAM VESSELS SHALL KEEP OUT OF THE WAY OF SAILING
VESSELS

ART. 20. When a steam vessel and a sailing vessel are proceeding in such directions as to involve risk of collision, the steam vessel shall keep out of the way of the sailing vessel.

COURSE AND SPEED

ART. 21. Where, by any of these rules, one of the two vessels is to keep out of the way, the other shall keep her course and speed. (See arts. 27 and 29.)

CROSSING AHEAD

ART. 22. Every vessel which is directed by these rules to keep out of the way of another vessel shall, if the circumstances of the case admit, avoid crossing ahead of the other.

STEAM VESSELS SHALL SLACKEN SPEED OR STOP

ART. 23. Every steam vessel which is directed by these rules to keep out of the way of another vessel shall, on approaching her, if necessary, slacken her speed or stop or reverse.

OVERTAKING VESSELS

ART. 24. Notwithstanding anything contained in these rules, every vessel overtaking any other shall keep out of the way of the overtaken vessel.

NARROW CHANNELS

ART. 25. In narrow channels every steam vessel shall, when it is safe and practicable, keep to that side of the

fairway or midchannel which lies on the starboard side of such vessel.

RIGHT OF WAY OF FISHING VESSELS

ART. 26. Sailing vessels under way shall keep out of the way of sailing vessels or boats fishing with nets or lines or trawls. This rule shall not give to any vessel or boat engaged in fishing the right of obstructing a fairway used by vessels other than fishing vessels or boats.

GENERAL PRUDENTIAL RULE

ART. 27. In obeying and construing these rules, due regard shall be had to all dangers of navigation and collision and to any special circumstances which may render a departure from the above rules necessary in order to avoid immediate danger.

SOUND SIGNALS FOR PASSING STEAMERS

(See art. 18)

ART. 28. When vessels are in sight of one another a steam vessel under way, whose engines are going at full speed astern, shall indicate that fact by three short blasts on the whistle.

PRECAUTIONS

ART. 29. Nothing in these rules shall exonerate any vessel, or the owner or master or crew thereof, from the consequences of any neglect to carry lights or signals, or of any neglect to keep a proper lookout, or of the neglect of any precaution which may be required by the ordinary practice of seamen, or by the special circumstances of the case.

DISTRESS SIGNALS

ART. 31. When a vessel is in distress and requires assistance from other vessels or from the shore the following shall be the signals to be used or displayed by her, either together or separately, namely:

In the daytime—

A continuous sounding with any fog-signal apparatus or firing a gun.

At night—

First. Flames on the vessel as from a burning tar barrel, oil barrel, etc.

Second. A continuous sounding with any fog-signal apparatus or firing a gun.

NOTE.—Another international day distress signal is NC, or a square flag having a ball above or below it. At night rockets fired at short intervals is also a distress signal in the international rules.

BUOYS

Uniform system of buoys in United States waters.—In coming from seaward, red buoys mark the star-board, or right-hand, side of the channel and black buoys the port, or left, side.

NOTE.—A convenient method of remembering this is “Red, right, return.” Red buoys on the right when returning from sea.

(2) Dangers and obstructions which may be passed on either side are marked by buoys with black and red horizontal stripes and may be left on either hand.



FIG. 227.—Buoys

(3) Buoys indicating the fairway are marked with black and white vertical stripes and should be passed close-to.

(4) Sunken wrecks are marked by the red and black obstruction buoys described in paragraph 2. In foreign countries green buoys are frequently used to mark sunken wrecks.

(5) Quarantine buoys are yellow.

(6) As white buoys have no special significance they are frequently used for special purposes not connected with navigation.

(7) The starboard and port buoys are numbered from the seaward end of the channel, the black bearing the odd and red the even numbers.

(8) Perches with balls, cages, etc., will, when placed on buoys, be at turning points, the color and number indicating on which side they shall be passed.

• TIDES

Every coxswain and boatswain's mate handling board or anchor gear should have a knowledge of the tides where they occur, and how they are named.

Tides are closely related to the passage of the moon over the meridian and are caused by the attraction exerted by the moon and by the sun on the waters of the earth. Tides are a rise and fall of the water; tidal currents are the flowing of the water in or out of place. The greatest height to which the tide rises is called high water; the lowest level to which it falls is called low water; that moment at either high or low water when no vertical movement takes place is called "stand," and the difference in height between low and high water is called "range."

Ebb tide.—When the tide is running out.

Flood tide.—When the tide is setting in.

Slack water.—When the water has no motion due to tide. In open bays it usually occurs near the time of either high or low water, but in narrow entrances flood tide often continues for several hours after the time of high water.

Spring tide.—The tides just after the new and full moon. The range of the tide is then the greatest. The high water is higher and the low water is lower than at any other time.

Neap tides.—They occur when the moon is near the first and third quarter. The range at this time is the least. The high water is not as high nor is the low water as low as at other times during the moon's phases.

In most harbors there are many swirls and eddies which should be learned. The tide is stronger in the center of a current than near the edges, and when a boat has to oppose the tide more progress can be made near the edge of the current.

STORM WARNING SIGNALS

In the United States the system of weather signals is very complete, information of the approach of storms being received from various stations in the United States and even throughout the West Indies. These warnings are published at the various seaports by the display of flags by day and lanterns at night.

The United States uses the signals described here

DAY

The United States has not adopted the international storm signals, but uses signals described here.

A small-craft warning.—A red pennant indicates that moderately strong winds that will interfere with the safe operation of small craft are expected. (NOTE.—No night display of small-craft warnings is made.)



The northeast storm warning.—A red pennant above a square red flag with black center indicates approach of a storm of marked violence with winds beginning from northeast.



The southeast storm warning.—A red pennant below a square red flag with black center indicates the approach of a storm of marked violence with winds beginning from the southeast.



The southwest storm warning.—A white pennant below a square red flag with black center indicates the approach of a storm of marked violence with winds beginning from the southwest.



The northwest storm warning.—A white pennant above a square red flag with black center indicates the approach of a storm of marked violence with winds beginning from the northwest.



Hurricane or whole gale wind.—Two square flags, red with black centers, one above the other, indicate the approach of a tropical hurricane or of one of the extremely severe or dangerous storms which occasionally move across the Great Lakes and northern Atlantic Coast.



FIG. 228.
Storm flags

Red flag with black center indicates that a storm of marked violence is expected; red and white pennants displayed indicate the direction of the wind—Red, easterly (from east to south); white, westerly (from southwest to north). The pennant above the flag indicates that the wind is expected to blow from the northerly quadrant; below, from the southerly quadrant.

NOTE.—Northwest and southwest signals as above indicate that storm center has passed. Northeast and southeast signals indicate that storm center is approaching.

NIGHT

Northeast storm warning.—Same significance as day signal.



Southeast storm warning.—Same significance as day signal.



Southwest storm warning.—Same significance as day signal.



Northwest storm warning.—Same significance as day signal.



Hurricane or whole gale wind.—Same significance as day signal.



FIG. 229.—
Storm night
warning

NOTE.—Red light indicates easterly wind; white light with red light indicates westerly winds. No night display for small craft warnings is made.

Duration of signals.—Signals remain displayed for 2 hours from the time specified in the order to hoist, change, or to continue them no longer unless a subsequent telegram is sent out ordering them down.

CHAPTER 45

HANDLING A SECTION AND A WATCH AT SEA; METHOD OF TAKING C. AND R. SOUNDINGS ON SMALL SHIPS

Duties in connection with handling section of a division at quarters.—The sketch shows the formation of the division at quarters.

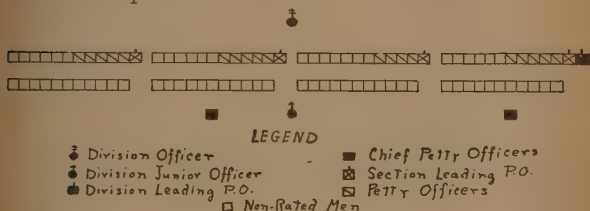


FIG. 230.—Division at quarters

The section leading petty officer will note that his position is on the right of the front rank of his section.

Other petty officers take post in the front rank of their own sections from right to left in order of seniority.

The seamen, first class, occupy the remainder of the front rank and all other nonrated men are in the rear rank.

Petty officers in charge of sections will see that their sections fall in at quarters in this manner.

TO FORM THE DIVISION

At assembly the division leading petty officer, in front of and facing the center of the division, commands **Fall in**. Each section leader then has his section fall in as prescribed above.

The division leading petty officer then commands **Muster the sections**. At this command each section leader takes one step to the front, faces to the left, and musters his section. Each faces to the front when the muster is completed.

The division leading petty officer then commands **Section leaders to the front and center**. At this command the section leaders face toward the center. At the command **MARCH** the section leaders march to the center and face to the front.

The division-leading petty officer then commands **REPORT**, and the section leaders report in succession from right to left. Section leaders do not salute the division-leading petty officer.

The division-leading petty officer then commands **POST**, at which the first and third section leaders face to the right, the second section leader faces about, and the fourth section leader faces to the left. At the command **March**, each section leader takes his post on the right of the front rank of his own section.

The section leaders remain in their positions for inspection.

DUTIES OF A SECTION LEADER

The section leader, under the division-leading petty officer, has full charge of his section and the part of the ship assigned his section. He supervises all the work required of his section, and is responsible that the work is carried on properly. He is accountable for the

neatness, cleanliness, and upkeep of his part of the ship. He is especially responsible that all title B equipment and all other equipment in his part of the ship is accounted for at all times and is always ready for use. He selects, with the approval of the division-leading petty officer and the division officer, all men from his section for special details, etc. He must be particularly careful not to show any favoritism or partiality in these selections, and should divide the men in his section in such manner that all these details will be assigned equally to all men. He must understand what details his section has to furnish for watches at sea and must arrange his men so that these watches are equally distributed among them. It is his duty to see that every man in his section thoroughly understands the duties required of him on watch. Before sending any man to their watch stations, he must satisfy himself that the man is thoroughly competent to perform his duties. When a call is made for working parties, etc., he must furnish his men promptly. A good section leader is a leader of men, who can direct and teach them in their work in such a way that it will be interesting instead of monotonous. He must be able to instruct the men under him in all duties of their rating. The section leader is marked on the manner in which he handles his section, the efficiency of his section, the condition of his part of the ship, and the leadership he displays toward his men. Any section whose men are unmilitary in bearing, slow in obeying orders, noisy at drills, slouchy or untidy at quarters, etc., is an inefficient section. Some one is strictly accountable and the section leader is very liable to be at fault. A section leader must remember that his section will look to him for guidance and example.

HANDLING A SECTION IN PORT

The section leader must be first in everything. At reveille, he should be up at the first call, and see that his section turns out promptly. He sees that the hammocks of his section are properly lashed and stowed and that coffee is ready for them. He finds out what the morning orders contain from his division leader, petty officer and gives proper instructions to his men for carrying out these orders. Before wetting down, he sees that all deck gear is cleared of the decks and the decks swept down. If clothes, hammocks, bag, mattress covers, or blankets are to be scrubbed, he sees that all men in his section turn to on them at once and that they are stopped on the lines properly. If hose, canvas, or bright woodwork are to be scrubbed, he sees that his men break out these articles promptly. He superintends all cleaning, teaches his men how to scrub decks, paintwork, etc., and sees that all parts are thoroughly cleaned. After drying down with squilgees, all wet places on deck and the waterway are dried down with swabs. Cleaning gear is neatly replaced. He sees all wet hose, swabs, etc., triced up or laid out in the proper place for drying. He must especially teach his men how to clean properly without ruining the paintwork, hose, or other gear, or causing unnecessary waste to the Government. He inspects his compartments below decks as often as necessary to see that they are properly cleaned.

The section leader may be a mess captain; if so he should inspect to see that his tables, mess gear, etc. are clean. He sees that his messmen are clean and that they serve the food promptly and properly.

After breakfast, he sees that all his men shift into the uniform of the day. He inspects the men going on

special duty as messengers, side boys, etc., and satisfies himself that they are in all respects ready for duty.

At Turn to he sees that his men start promptly on their brightwork. Before the men finish, he inspects all brightwork and sees that all stains of brightwork polish on paintwork, etc., are removed. He sees all his compartments and decks cleaned up for quarters.

At quarters he sees that all his men are clean and in clean clothes. The division officer holds him partly responsible for the condition of all of his men. Systematic inspection of the men in ranks and following up those who do not pass satisfactory inspection to make them clean up, are important duties of the section leader.

At setting-up drill the section leader will take a station where he can best note the performance of his men. Ordinarily, section leaders will take part in these exercises, but he should not hesitate to stop and correct errors on the part of his men. At the first opportunity he should get the men who are deficient in this drill and teach them the proper procedure.

If the drill is one where clothes may be soiled or spotted with grease, he should warn his men to have an old suit ready to put on immediately after quarters. When drill call sounds, he will require his men to go to their proper station quietly and on the double. He should be an example to them in this respect. Where the drill requires apparatus, as rifles for infantry drill, ropes for knotting and splicing drill, etc., he should see that this is provided at division quarters prior to the drill period. The division officer should never have to delay a drill for lack of the apparatus necessary.

After drill, if he has no ship's work requiring old clothes, he should see that his men get into clean uni-

forms. The section leader must organize his ship work so that all will be done properly and according to a set routine. He should have a schedule of overhaul for all the davits, turnbuckles, blocks, boats, boogie gear, equipment, etc., in his part of the ship so that none will be forgotten and all will work properly when needed. Frozen davits, frozen turnbuckles, or frozen blocks are a sign of a disorganized section and an inefficient section leader.

The section leader will take care to see that the afternoon drill and ship's work are carried on properly. He should inspect all his compartments below decks to see that the water-tight doors, fire hose, etc., are in proper condition. A water-tight door is in proper condition when the gaskets are clean, the gasket strip in proper place with all screws in, all dogs working and set properly to push the door firmly against the knife edges, and the knife edges bright and free from paint. All fire hose with nozzles and spanner wrenches must be in their places, and the hose and nozzles must be supplied with gaskets. All air ports should have their dogs and gaskets free of paint. All title B equipment and other equipment must be in its place.

The section leader will see that his liberty list is made out in time and turned over to the leading division petty officer. If some of his men should want special liberty, and their reasons are good and the services can be spared, he should take their case to the leading division petty officer. He must arrange his liberty lists or make necessary arrangements so that the work in his section is properly carried out during the time that his men are ashore.

He must notify the men who are to have the anchor watch and see that they know their duties, where they are to muster, and where they are to sleep. At hand

mocks, he sees that his men go promptly to their nettings, fall in facing aft in two rows, and get their hammocks when the call is piped. He instructs his men concerning ship regulations and Navy regulations, and is responsible that the men comply with these regulations while under his control; he is always responsible for carrying out police regulations among men in his vicinity if they are of lower rating than he holds.

HANDLING A SECTION AT SEA

The section leader musters his section prior to each watch and reports his section to the boatswain's mate of the watch. He then gives such instructions as are necessary to his men as to what watches they will have, where they are to stay when not on watch, etc. He then sees that his men take their stations as soon as the word is passed to **Relieve the wheel and lookouts**, and reports to the boatswain's mate of the watch when this has been done.

The section leader must remember that the officer of the deck holds the boatswain's mate of the watch responsible for relieving the various stations and that the men on these stations know their duties, and that the boatswain's mate of the watch is going to hold the section leader responsible for his own men. During night watches especially, it is important that the section leader be alert, and that he keep his men together where he can get them quickly in an emergency. When the boatswain's mate of the watch passes the word for any work to be done, the section leader will see that his men carry out the order promptly.

If the section leader is the coxswain of the lifeboat, he must be especially alert. He must see that his boat's crew is dressed and ready to man the boat at a mo-

ment's notice. He may let the men sleep on deck, provided some one is detailed to keep awake and call the men when necessary. All of the boat crew and men detailed for lowering must be together. When the boat crew is mustered, the section leader will see that the men muster abreast their thwarts and the men detailed for lowering muster at their respective davits. At the first muster after 8 p. m. each man should be told to state his duties at both lowering and hoisting. The section leader reports the lifeboat crew mustered and boat ready for lowering direct to the officer of the deck.

Section leaders will take care that all work and watches are distributed evenly to the men of his section.

METHOD OF TAKING C. AND R. SOUNDINGS

Sounding tubes are fitted from one of the upper decks to the lowest point in trimming tanks, main compartments of the hold, peak tanks, and certain double-bottom compartments, as well as to certain other compartments and tanks which are under supervision of engineering personnel. On board ship the ones not under supervision of the engineer officer are sounded according to a set routine, and the results of these soundings called the C. and R. soundings, are immediately reported to the officer of the deck. The reports are made at 8 p. m. in port; under way on large vessels the soundings are reported every hour from 8 p. m. to 8 a. m. and on smaller vessels ordinarily every two or four hours, according to ship regulations.

On small vessels coxswains are required to know where the sounding tubes are located and how to take the soundings. Sounding tubes end in a flush plate fastened to the deck; the hole in the plate is closed with a water-tight cap screwed in; the plate is marked with

the number of the compartment of which the sounding is taken. The sounding rod is of metal at least 2 feet long; it may be jointed; it is marked off in inches, and a chain or line is fastened to the top by which the rod may be lowered into the tube. Before each sounding the rod should be dried off and chalked, then the rod is lowered in the tube until it touches bottom, and immediately drawn up again. If the ship is rolling it should be lowered and hoisted rapidly when the ship is temporarily on an even keel.

Presence of water and the depth of the sounding show clearly on a chalked rod; sounding and compartment number should be written down at once to avoid mistakes, and unless there seems to be an emergency the sounding should be reported at the routine hour.

CHAPTER 46

MARLINESPIKE SEAMANSHIP; WORK WITH PALM AND NEEDLE; KNOTTING AND SPLICING

MARLINESPIKE SEAMANSHIP—PRACTICAL WORK IN KNOTTING AND SPLICING

Coxswains will be required to have a thorough knowledge of all knots and splices in chapter 33, of Part III, of this manual in addition to the subject matter contained in this chapter.

Figure 231 shows a number of knots which are worked into the ends or body of a rope for various purposes, such as, to prevent the ends from unreeving, to give a finish to the end of the rope, or merely for ornamental purposes.

Figure 232 shows the following:

1. **A stopper on a rope.**—Used for holding a heavy weight, boat, etc., while belaying.

2. **Strap on a rope.**—Used for hooking a tackle on a rope.

3. **Mouse a hook.**—Used to prevent a hook from disengaging.

4, 5, and 6. **Grommet strap.**—A permanent strap made for attaching a block and hook.

Figure 233 shows various methods for bending a rope to a post or spar.

Splicing (hemp and manilla). (See fig. 234.)

An eye-splice.—Approximate the size of the eye to be made in the rope. Unlay the strands in the end of the



Fig. 1.

Wall Knot.

Fig. 2.



Wall and Crown.



Fig. 3.

Double Wall and Single Crown.



Fig. 4.

Double Wall and Double Crown
or "Man Rope Knot."

Fig. 5.

Double Matthew Walker (1)

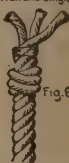


Fig. 6.

Double Matthew Walker (2)



Fig. 7.

Single Matthew Walker (1)



Fig. 8.

Single Matthew Walker (2)

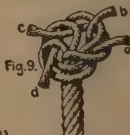


Fig. 9.

Laniard Knot (1)



Fig. 10



Fig. 11



Fig. 12

Whipping the End of a Rope

FIG. 231.—Knots worked in the end of a rope

[Reproduced by permission from Knight's Modern Seamanship.]

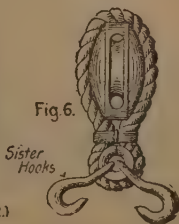
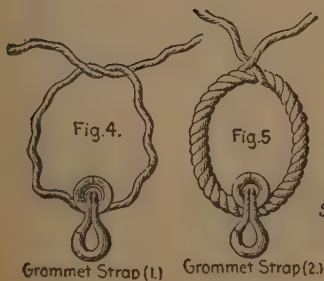
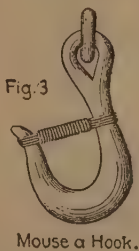
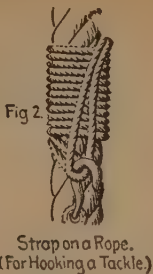
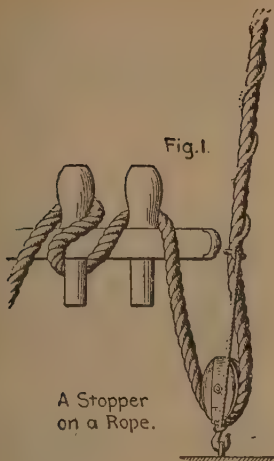


FIG. 232.—A stopper on a rope, hooking a tackle, etc.
[Reproduced by permission from Knight's Modern Seamanship.]



Fig. 1.
Studding Sail Tack Bend.



Fig. 2.
Studding-Sail
Halliard Bend.



Fig. 3.
Fisherman's Bend.



Fig. 4.
Timber Hitch.



Fig. 5.
Timber and Half Hitch.



Fig. 6.
Inside Clinch.

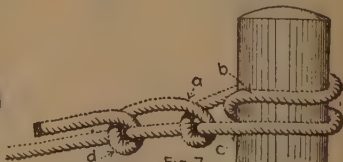


Fig. 7.
Round Turn and Two Half Hitches.



Fig. 8.
Half Hitch



Fig. 9.
Two Half Hitches.



Fig. 10.
Clove Hitch.

FIG. 233.—Bending a rope to a post or spar



FIG. 1.
TOOLS FOR SPLICING



FIG. 2.
EYE SPLICE (1)



FIG. 3. EYE SPLICE (2)



FIG. 4.
EYE SPLICE (3)



FIG. 5.
SHORT SPLICE (1)



FIG. 6.
SHORT SPLICE (2)



FIG. 7.
SHORT SPLICE (3)



FIG. 8. LONG SPLICE (1)

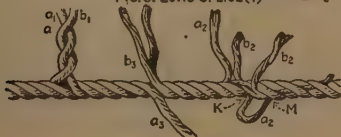


FIG. 9. LONG SPLICE (2)

FIG. 234.—Splices, hemp and manila

[Reproduced by permission from Knight's Modern Seamanship.

rope, making the lengths plenty long enough, and bring the strands back to the body of the rope at the place where it is desired to form the eye. Start with one strand as shown in Figure 234, tucking it through the strands of the rope, going over one and under the other. The remaining two strands are similarly done as shown. After all three ends have been tucked in they are cut down to two-thirds their original size, tucked again, then cut to one-third their size and tucked for the last time. If splicing a 4-stranded rope, the process is the same except the first strand goes under two the first time it is tucked, and only then.

A short splice.—This is used for joining two ropes together. Both ends to be joined are unlaid and tucked together as shown in Figure 234. The strands are then tucked in the main body of the rope as in making an eye-splice. This process must be done twice, since there are two sets of strands.

A long splice (fig. 234).—The two ends of the ropes are unlaid a much greater distance than for the other two kinds of splices. The ends are interplaited as shown (fig. 8 of fig. 234). Unlay a_1 again some distance, inserting in its place b_1 , the adjoining strand of rope B, going back at least about a foot and a half. Take them out of the way twist them together as shown in fig. 9 of fig. 234. End for end the rope; unlay b_2 and place by a_2 as was done for a_1 and b_1 . End for end the rope again. There are at present on the line three pairs of strands. Start with any pair, such as a_2 and b_2 , and divide each of the two ends into halves. With one-half of one strand overhand knot it with a half of the other strand (see K of fig. 234) and tuck and take these half strands as in a short splice (see M of fig. 234).

The remaining strands (a_1 and b_1 , a_3 and b_3) are spliced the same way as a_2 and b_2 . Cut off the half-strands not used.

Palm and needle.—All coxswains must know how to use the palm and needle and must be able to teach the men under them in their use.

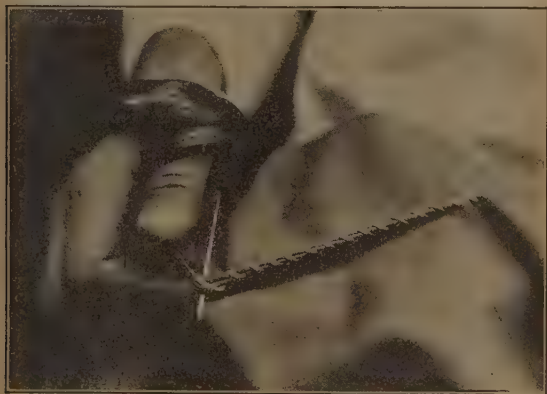


FIG. 235a.—Round stitch

Figures 235a-d show four of the common stitches used in the Navy. The round stitch (fig. 235a) is used for making bags, serving, etc. The flat stitch (fig. 235b) is used for making seams on sails, tarpaulins, etc. The baseball stitch (fig. 235c) is used where a snug fit on canvas is required. The herringbone stitch (figs. 235d and 235e) is used on painted or very stiff canvas.



FIG. 235b.—Flat stitch



FIG. 235c.—Baseball stitch

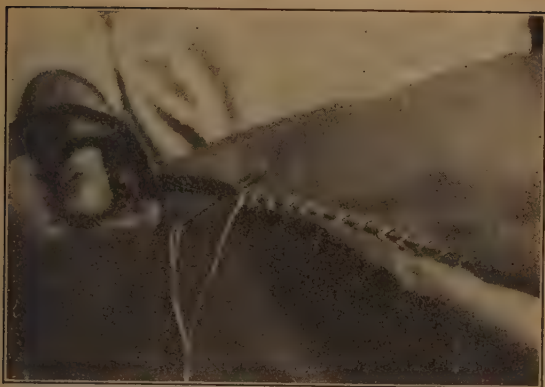


FIG. 235d.—Herringbone stitch. First movement

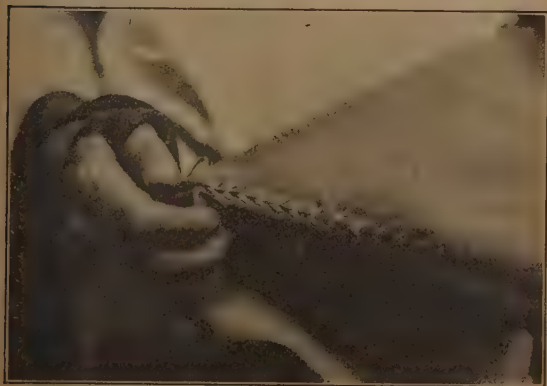


FIG. 235e.—Herringbone stitch. Second movement

CHAPTER 47

DECK SEAMANSHIP — GENERAL PRACTICE; BLOCKS AND TACKLES, USES AND PROPER LEADS; RIGGING BOOMS AND WHIPS FOR COALING AND OTHER PURPOSES

Seamen, first class, must know all of chapters 3 and 4 of Part III in addition to this chapter.

Hawsers.—Hawsers are heavy lines used for towing, mooring ship to dock, or for other purposes where great strength is required. All ships are supplied with hawsers of various sizes, only the largest ships being supplied with the heaviest types.

Manila hawsers are 120 fathoms long and wire hawsers 100 fathoms. The towing hawser is 150 fathoms. The sizes for the manila hawsers represent the circumference, while the sizes of the wire are given for diameters. The $2\frac{1}{4}$ -inch wire hawser is used as a towline. All coxswains must know what hawsers their own particular ship is supplied with.

Hawsers are stowed on reels placed in the most convenient part of the ship. Great care must always be exercised to see that no kinks are put in any wire hawsers, as, under these conditions, even a fairly small strain may ruin it. Where hawsers are broken out for mooring ship, they must be unreeled carefully and faked down on deck clear for running. This is done by laying the hawser fore and aft on deck and capsizing the end loops which leaves the running out end always on top. Before reeling up a hawser, always fake it

down on deck first to clear the kinks. To prevent mildew and rotting, manila hawsers should be thoroughly dried before stowing.

Fenders.—Fenders are found in many different shapes and sizes aboard ship. They vary in size from small pads covered with leather for use over a small boat's side, to immense rope or cane-covered pads for use over the side of large ships. Fenders are used to protect the side of the ship when coming alongside a dock or another ship. They should be large enough to distribute the pressure over several frames. If the pressure is on a single frame, a fender may do more damage than good. Large cane fenders should be rigged fore and aft. Fenders are also used for hoisting boats when, due to the roll, there is danger that the boat will swing against the ship's side.

BOAT FALLS, SPEED-CONE HALLIARDS, SIGNAL HALLIARDS

Most boat falls are $3\frac{1}{2}$ -inch manila. For heavy motor launches the falls may be 4-inch or $4\frac{1}{2}$ -inch manila. Speed cone halliards are 18-thread manila. Signal halliards are Italian hemp 9-thread senner, which is flat cordage, made by plating rope yarns thread together, and is very flexible.

Rigs of sailing ships.—Figure 236 shows the various types of rigs on sailing ships. The brigantine is the same as the brig, but without the square mainsail.

A ship is square-rigged on a certain mast when the sails on that mast are bent to yards, and fore-and-aft rigged when the sails are bent to gaffs.

Masts on two-masted ships are named fore and main; in three-masted ships, fore, main, and mizzen; in four-

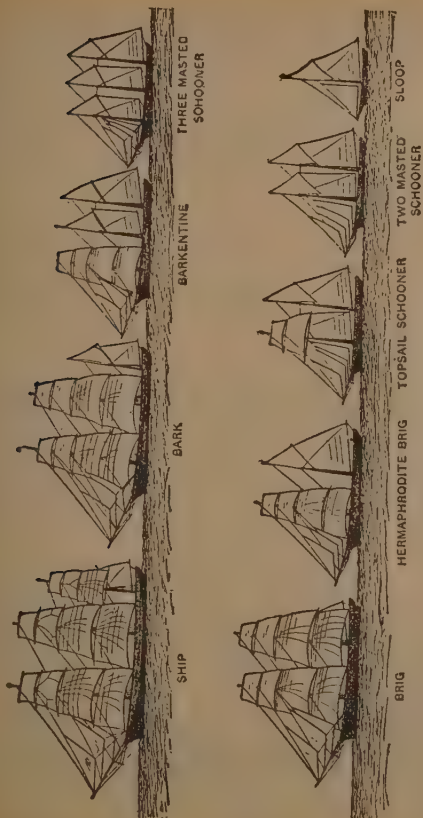


FIG. 236.—Rigs of sailing vessels
[From Luce's Seamanship, 1884]

masted ships, fore, main, mizzen, and jigger; in five-masted ships, fore, main, middle, mizzen, and jigger.

Rigging ship for coaling.—Provide hawsers fore and aft, bend on heaving lines, and have hawsers ready to be passed when coal barges or colliers come alongside.

Clear away life lines, hinge down or unship stanchions and davits, and rig in lower booms.

Rig coaling booms and chutes, coaling-chute screens and nets, if required.

Close and batten down hatches, as ordered.

Rig jury rails around all open holes in decks; keep covers on when possible.

Provide coal bags, shovels, grapnels, coaling screens, whips, coaling trucks, backstays, and guys for coaling booms. Unship scupper lips.

Provide fenders forward and aft.

Unrig gangway fenders; trice up ladders; hinge to platform and ladder up over the rail, and lash, if necessary. Unship gangways, if ordered. Unship strong back of scuttle plates. Remove plates *only when necessary*. Hoist out boats as necessary, and dispose of them as ordered. Provide boat keeper for group of boats anchored off.

GETTING UNDER WAY

The following are the general duties of the deck divisions in making preparations for getting under way.

Secure chests and all loose articles about the deck.

Furl awnings.

Rig leadsmen's chains.

Get up boat covers.

See all clear around propellers.

Put on weather cloths of searchlight platform.

Hoist in all boats and secure for sea.

Side cleaners take in grab ropes and scupper lips.

Rig in gangways, lower and quarter booms.

If alongside dock, single lines when ordered.

Secure lifeboats for sea.

Station sea details.

Preparing for harbor.—The following are the general duties of the deck division in preparing for harbor:

Prepare lifeboats for port.

Square up boats at davits.

Get boats ready for going out with crews in the boat.

Send leadsmen to the chains.

Have both anchors ready for letting go.

Lower wash clothes.

Get out both gangways.

Rig lower booms.

Take off gun covers and searchlight covers.

See side boys detailed and in clean uniform.

Mooring ship to dock.—The following are the general duties of the deck divisions in preparing to moor ship to dock:

Take down hawsers fore and aft; bend heaving lines and point hawsers through proper chocks or eyes.

Provide line for lashing shoe for spur shores.

Provide cane fenders fore and aft.

Provide deck jiggers and heavy straps for landing gangways.

After lines have been secured ashore, pass heel lashing on spur shores and pass mooring chains through mooring irons.

Put on chaffing gear and rat guards.

If necessary, rig in overhanging boats and hoist anchor in board, off the billboard.

BLOCKS AND TACKLES, USES AND PROPER LEAD

Strapping blocks.—A strap may be made either splicing two ends of a rope together, or by working a grommet of the proper length. About once an half around the block will allow an end for splicing. Pass strand of rope through eye of hook, then fit block and splice, or work grommet. Put seizing strap between thimble and block. Splice goes breech of block. It is sometimes thought best to wrap parcel, and cover strap with leather before securing it in place.

TACKLES

Single whip.—The simplest form of tackle is a single whip—a rope rove through a stationary block. This tackle gives a better lead, but does not increase power. The pull is the same as the weight. It is used for hoisting and lowering stores and for landing other light weights. (Fig. 237, A.)

Runner.—This is a single movable block, the block being fitted with a hook. One end of the line is made fast, and the other end is the hauling end. With this tackle the pull is half the weight lifted. (Fig. 237, B.)

Whip and runner.—A combination of the single whip and runner. (Fig. 237, C.)

Gun tackle purchase.—Two single blocks. The pull on this is half the weight lifted. (Fig. 237, D.)

Luff tackle.—The jigger, a double and single block. The standing part is made fast to the single block. The pull on this is one-third the weight lifted. (Fig. 237, E.)

Twofold purchase.—Two double blocks. The standing part is made fast to the block that the hauling part comes from. Used for boat falls. The pull on this is one-fourth the weight lifted. (Fig. 237, F.)

Threefold purchase.—Two triple blocks. This is the heaviest tackle usually found aboard ship. Used for handling ground tackle and other heavy weights. The

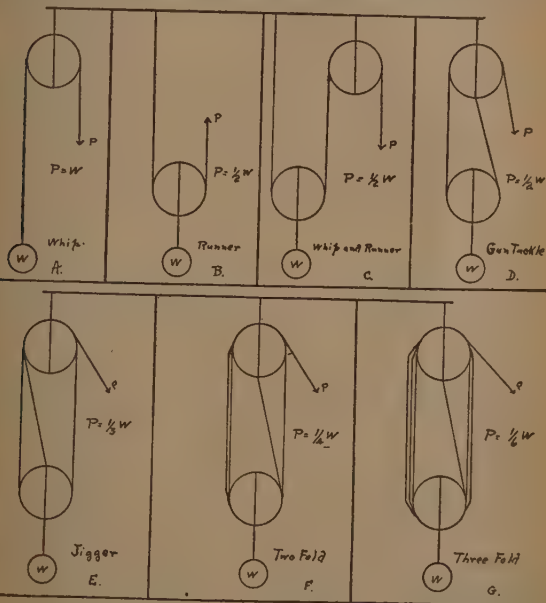


FIG. 237.—Tackles

pull is one-sixth the weight lifted. The standing part is made fast to the block that the hauling part comes from. (Fig. 237, G.)

Other tackles are combinations of the above and given special names from the purposes for which used.

The ratio of the pull to the weight lifted as given for each tackle above is the theoretical one, neglecting friction. Friction of the stiff rope over the sheave and friction due to the sheave turning on the pin cause a large loss of power. This friction amounts to about 10 per cent of the weight for each sheave. As an example to lift a 1,000-pound weight with a threefold purchase due to the friction of the six sheaves we should add 10 times 10 per cent, or 60 per cent, to the weight, making the total weight 1,600 pounds. The pull necessary to lift this weight will be one-sixth of 1,600 pounds, or 267 pounds.

The thumb rule, then, to find the power required on the hauling part is to add to the weight the percentage for friction at each sheave (10 per cent for each sheave) and divide the sum obtained by the number of parts at the movable block.

Tackles should always be hooked so that the block containing the greater number of sheaves is next to the weight to be lifted. Tackles should be led so that the hauling part is as nearly in line with the rest of the tackle as possible.

Ships are also supplied with duplex or differential tackles, which are patent pulleys, made entirely of steel and fitted with chain cables. They are used for lifting very heavy weights for short distances. Depending upon the ratio of the gearing, the power in these tackles can be made whatever is desired.

OVERHAUL OF BLOCKS AND RIGGING

To overhaul blocks the pin and sheaves are taken out and all the rust and old grease carefully removed.

Care must be taken not to use emery any more than necessary to displace the rust, as this wears away the pin. Before assembling, the pin should be carefully greased with heavy grease or with a mixture of tallow and white lead.

Running rigging must always be slacked up in wet weather, as the rope shrinks when wet and the rigging may become so taut as to carry away something. Dew at night is sometimes heavy enough to thoroughly soak the lines, and therefore all running rigging should be slacked off every night. This applies especially to all signal and flag halyards. Smoke-pipe guys should be slackened when steam is formed in the boilers under them, as the heat from the gases causes the smoke pipe to expand considerably.

Standing rigging, if of hemp, is protected from the weather with a coating of tar oil and coal tar. This must be renewed at regular intervals. Wire rigging is protected by being galvanized and then wormed, parceled, and served and coated with tar oil and coal tar. If the wire is not galvanized it should be covered with a mixture of red lead and boiled linseed oil before worming, parceling, and serving.

RIGGING BOOMS FOR COALING AND OTHER PURPOSES

Ships burning coal are all supplied with booms for hoisting the coal bags aboard. These booms, with their supports, are placed where they will plumb the coal chutes near them. The number and type of coaling booms used vary with each type of ship. Each coxswain must know how the particular type of booms on his ship are rigged, how the whip from each boom is led to the deck winch, and the proper lead for each boom guy. (See fig. 238.)

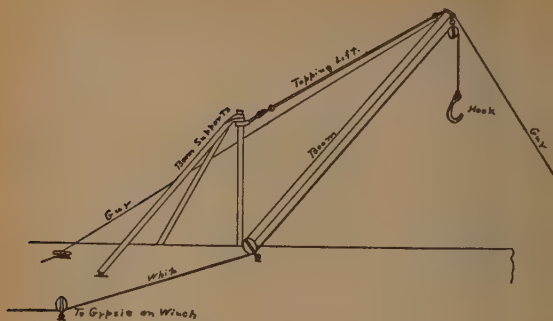


FIG. 238.—Typical coaling boom



FIG. 239.—Use of boat line

USE OF BOAT LINES

Figure 239 shows how a boat line is used to hold a boat alongside the gangway in a strong tideway. The boat line is led from well forward on the ship. It is led around a cleat on the inboard bow of the boat and secured. The rudder is put over outboard as shown in the sketch. By a judicious use of the rudder the boat can be held in the position shown. The bowman and sternman should assist, if necessary, in keeping the boat off with their boathooks, but far the greatest aids in keeping the boat off are the boat line and rudder.

CHAPTER 48

ABILITY TO IMPART INFORMATION TO NON-RATED MEN; MESSES; PRECEDENCE OF PETTY OFFICERS

1. The importance of giving proper instructions and information to the seamen, the ability to impart such information.—Coxswain must realize the importance of giving proper instructions and information to seamen. One of the principal duties of a petty officer is to instruct the men under him in the proper performance of their duties. Before anyone can properly instruct a person he must first learn every detail of the work himself. It happens too frequently that a squad leader appears before his squad with only a vague idea of the drill he is to give them. He has not taken the time to study the drill ahead of time, and as a result his efforts are a failure. It is the most important part of every instructor's duties to see that he has complete and detailed knowledge of every drill or other type of instruction which he is to hold. A failure to have this knowledge makes him the laughing stock of his men and marks him as a complete failure as a leader of men. There can be no actual leadership without full knowledge. Leaders must never trust their memory too long, but should study the details of their drills beforehand so that there can be no question of their ability to carry out proper instruction. Men respect their leaders for what they know. They soon find out whether or not their leader knows his job. Bluffing never hid ignorance for long. It is always found out and it always stamps a leader as a failure.

Besides being able to give proper instruction and information to nonrated men, the coxswain should learn how to get them to carry out his instructions. He should be able to direct them in their work and see that they do it properly. Many petty officers fail in this important task. They usually end up by doing the most of the work themselves. By doing this, he wastes the efforts of the men under him and the net result is a very inefficient unit on the ship. The first requirement to attain efficient leadership is for the coxswain to know every detail himself. The men will immediately have high respect for him on this account alone and will be glad to take his orders.

DUTIES OF A PETTY OFFICER

This subject and "Shore patrol" are taken up in Part VII, chapter 58.

DUTIES IN CONNECTION WITH MESSES

The ship's crew is divided into messes of about 20 men each, each mess being made up of men from the same division if possible. As far as practicable messes are set in that division's part of the ship. A petty officer, called the mess captain, is in charge of the mess and all complaints by members of the mess must be made to this petty officer. He should then investigate the complaint and if necessary bring the complaint to the attention of the officer of the deck. The mess captain is responsible that proper order is kept, that food is not wantonly wasted, and that food is properly served. He should see that the mess cook keeps all his gear clean, and his person also; that he has all the mess gear allowed and that it is in good condition. If an question is raised by the mess cook about going to the

galley for a second issue, the mess captain should hear what the mess cook knows about issues from the galley and should then give orders to the mess cook. The mess cook can not refuse to obey orders from the mess captain.

In large ships police petty officers are placed in charge of all messmen and they are responsible that the messmen carry out their duties. They inspect the messmen every day and inspect the mess tables and mess gear before every meal.

Petty officers in most cases make recommendations for the choice of mess cooks; those recommended should be neat in appearance, industrious, and interested in their work. Dirty, unkempt mess cooks, battered and broken mess gear, and ill-kept mess compartments produce general discontentment in a ship. On the other hand, an efficient mess cook can justly take the greatest pride in his work, for no man of his rating in the ship does more for the comfort and contentment of his messmates than he. Furthermore, one efficient mess cook among a number of poor ones only stands out the more clearly because of their failure; all hands should willingly lend the mess cook a hand when he is overworked, and he should be encouraged to be proud of the quality of his mess.

The detail of mess cook should be presented to the men as one of pride and not one of punishment.

THE ORDER AND PRECEDENCE OF PETTY OFFICERS OF THE SEAMAN BRANCH

The petty officers of the seaman branch take precedence in the following order:

Boatswains' mates, gunners' mates, turret captains, torpedomen, quartermasters, signalmen, fire-control

men. A chief boatswain's mate, for instance, is senior line petty officer, followed by the chief gunner's mate, etc. A boatswain's mate, first class, takes precedence over a gunner's mate, first class, etc. A boatswain's mate, second class, takes precedence over a gunner's mate, second class, etc. A coxswain takes precedence over a gunner's mate, third class, etc.

A chief petty officer takes precedence over a first class petty officer at all times. For instance, a chief fire-control petty officer takes precedence over a boatswain's mate, first class. Similarly all higher ratings take precedence over lower, as, for instance, a gunner's mate, second class takes precedence over a coxswain.

PRECEDENCE LIST OF PETTY OFFICERS OF THE SEAMAN BRANCH AND THE ENGINEERS' FORCE

As a rule, petty officers of the artificer or special branches will not be assigned to divisions in which there are petty officers of the seaman branch. But if they are so assigned, the petty officer of the seaman branch takes precedence in all matters pertaining to military control or command in his part of the ship. In the case of the responsibility for a ship's boat, the same rule applies as that of petty officers of the seaman branch. The senior petty officer of the artificer or special branch takes precedence in his own compartment or part of the ship.

Precedence in ships' boats does not follow the rule just listed. In accordance with Navy regulations, when line officers are in a boat the senior one is responsible for her safety and management. Certain chief warrant and warrant officers are line officers, and the reg-

lations which place the responsibility for boats upon commissioned line officers affects also chief boatswains and chief gunners, boatswains and gunners.

When the officer of the deck gives orders to the coxswain of a boat, these orders carry the authority of the captain. Of course the captain and executive officer can at any time rescind them. If any other line officer gets into the boat, takes charge of it, and diverts it from duties previously assigned, this officer has a right to know what orders of his seniors have not been carried out. The coxswain should request permission to tell him.

If special dangers to the boat or its passengers arise, in the absence of any line officer authorized to take charge of the boat, it is the duty of the senior boatswain's mate in the boat to relieve the coxswain. With the exceptions above mentioned, other persons in the boat are passengers and they are subject to the orders of the coxswain in matters that affect the safety and good order of the boat and its occupants.

CHAPTER 49

GROUND TACKLE IN DETAIL; THE WINDLASS; MOORING SHIP, GEAR USED

GROUND TACKLE IN DETAIL

Coxswains will be required to know all of chapter 36, Part III, on ground tackle.

PRACTICAL WORK ON THE WINDLASS

A coxswain must learn the practical work connected with the operation of the windlass on his particular ship. He must be able to disconnect and connect up the wildeat, know thoroughly how to apply the brakes, know how to connect and disconnect the capstan, and know how to start and stop the engine or motor on the windlass. While under ordinary conditions men of the artificer ratings are detailed to control the windlass, yet, in emergencies, such as at night on anchor watch, it is sometimes necessary that the coxswain in charge of that watch be called upon to veer chain or heave in chain before the men regularly detailed can get to their stations.

VEERING CHAIN

Veering chain is often necessary when a storm comes up, and in some cases the coxswain in charge of an anchor watch has to carry out this operation under the directions of the officer of the deck. When the anchor

is secured after anchoring, the chain stoppers are secured to the chain, the wildeat disconnected, and the brake bands set up taut. To veer chain, first see that the wildeat is actually disconnected. Then see that the brakes are set up taut. Upon orders from the officer of the deck, let go all the chain stoppers. This is done by taking out the pin holding the link of the pelican hook in place and then knocking the ring of the pelican hook, which allows the hook to disengage the cable. The chain can now be veered by slackening up on the brakes. If there is a heavy strain on the chain, great care must be exercised to veer only a little at a time so that the ship does not gather appreciable sternway, otherwise when setting up on the brakes the chain cable may be put under an excessive strain and the anchor itself may be caused to drag. As soon as enough chain has been veered, set taut the brakes and put on all the chain stoppers. In putting on the stoppers, set up on the turnbuckles equally so that each stopper carries the same strain.

HEAVING IN

First get power on the windlass motors, or get the engineman on watch to warm up the anchor engine. Ask for pressure on the deck pump in plenty of time. When the windlass is ready for heaving round, notify the officer of the deck. Under his direction connect the wildeat. Then let up on the brakes, take the strain of the chain cable on the wildeat by heaving in a fraction of a turn, stop the engine or motor, and set up on brakes again. This assures you that everything is ready for heaving in. When ordered, cast off the chain stoppers, release brakes, and heave in the chain.

more than one fathom of chain is to be hove in, have chain tierers sent into the chain locker to tier the chain. When the necessary chain is in, stop the engine and set up on the brakes. Put on all chain stoppers and set them up equally taut. Then disconnect the wildcat and report the chain secured to the officer of the deck. If everything is satisfactory, secure the engine or motor.

DECK WINCHES

Deck winches, driven either by steam engines or electric motors, are found on all of the larger ships, and are used for hoisting boats, handling heavy lines, for mooring ship, warping, and coaling ship. These winches drive a horizontal shaft on which are drums or "gypsies." Every seaman, first class, and coxswain must know how the winches on his ship are operated, and must actually be able to operate them.

Deck winches driven by series motors may run so fast with no load as to tear themselves to pieces. They should be run only at moderate speed, which can be accomplished by moving the controllers to the "off" position from time to time to allow the motors to slow down.

In painting deck winches the utmost care should be taken not to allow paint to cover oil holes, or to put it on gears, screw threads, or sliding or rubbing surfaces. Coxswains should detail careful, experienced men to cut in the working parts with paint and the neighborhood of oilways; a less skillful man can fill in the remainder. Paint will not stick to a greasy surface; it must be cleaned first with kerosene, then with clean water.

OVERHAULING SHACKLES

Shackles must be frequently overhauled and kept in good working condition. Every seaman, first class and coxswain must know how to take out and put back again the forelock pin in the U shackles and the tape pin in the Kenter shackles. These pins have an annular ring at one end into which the lead keying ring is forced to hold the pin firmly in position. The spare Kenter shackles should all be well greased. When assembling Kenter shackles, all machined surface must be well slushed with heavy grease or a mixture of 40 per cent white lead and 60 per cent tallow.

THE PRINCIPLES OF MOORING SHIP, GEAR USED, LEADS

A vessel in mooring uses two anchors separated at such a distance that her bow is held practically stationary in the line joining the two anchors. The vessel will swing around her stem as a pivot. The chief advantage of anchoring in this fashion is that a ship will swing in a much smaller space than if one anchor were down. Ships are moored in places where the channel is narrow and the current strong; for example in the Hudson river.

The steps of mooring ship will be briefly detailed here. Assume the tide-running ebb, with orders to use the two bower anchors, 45 fathoms on each chain, the port anchor to be let go first and port chain allowed to run out. The ship steams slowly to the berth assigned and the port anchor is let go. The port chain is veered as the ship forges ahead. At the command from the bridge, the starboard anchor is let go, when about 90 fathoms of port chain is at the water's edge. The ship's

headway is now stopped and the ship allowed to drift downstream as the port chain is hove in and the starboard chain veered until the 45-fathom shackles on both are a short distance abaft the forward chain stoppers. The ship will now ride to the starboard chain. The forward chain stoppers are put on both chains. One section of the crew unshackles the star-

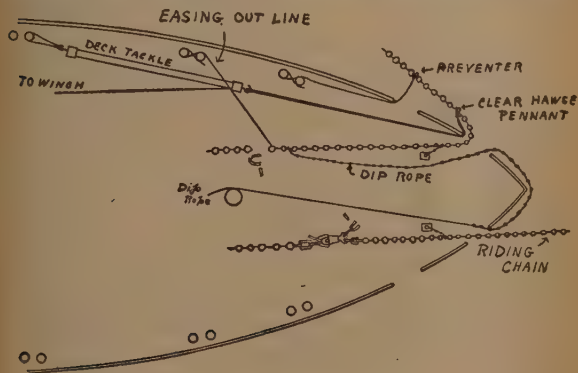


FIG. 240.—Mooring ship

board chain at the 45-fathom shot and shackles on the mooring swivel cup aft. As soon as swivel is on, the forward chain stopper is removed and the starboard chain veered until the swivel is just about aft the hawse pipe. In the meantime, another crew has been securing the port chain, preparatory to unshackling it and heaving the end around the stem of the ship, in through the starboard hawse pipe and shackling it to the swivel.

The clear hawse pendant is led out through the port hawse pipe and secured to the port chain by means of the pelican hook. The slack is then taken in and the clear hawse pendant securely belayed. The preventer hawser is then led out through the port sheet hawse pipe, made fast to the port chain below the clear hawse pendant by means of a rolling hitch, the slack taken in and securely belayed. The preventer, as its name implies, prevents the chain from going adrift in case the clear hawse pendant should part. This is a necessary precaution, as the chain is heavy and once adrift will be hard to recover. The easing-out line is now hooked to the end link of the port chain, the hook moused, and the line taken to a bitt, where several turns are taken preparatory to easing out the chain. The dip rope is now led out through the starboard hawse pipe around through the port hawse pipe and made fast to the third link on the port chain. The other end of the dip rope is led to a gypsy on a winch or to the capstan, preparatory to hauling the end of the port chain out through the port hawse pipe and up into the starboard hawse pipe. When all is ready, the port chain is unshackled and the chain stopper removed. The man on the easing-out line gradually slacks away on his line as the dip rope is gradually hauled in. When the port chain enters the starboard hawse pipe, the easing-out line is kept slack, but with several turns on the bitts, so that in case the dip rope parts, the end of the chain can be easily recovered. As soon as the end of the chain is at the swivel, it is shackled to the swivel and the starboard chain then veered until the swivel is just outside of the hawse pipe. The loose end of the port chain is usually shackled to the sheet anchor so that anchor will be ready for letting go, or else it is hove in near the wild cat out of the way. All gear is then secured.

In another method quite similar to the one just described it is not necessary for a man to go over the side, and both cables can be handled at the same time. The easing-out line and dip rope are passed before anchoring. The order of letting go the anchors, unshackling the chains, and putting on the mooring swivel is the same as in the previous method.

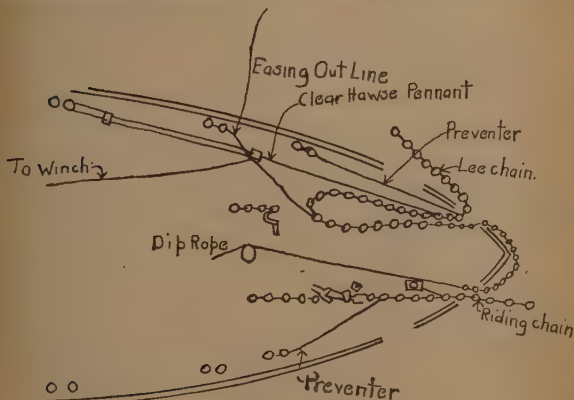


FIG. 241.—Mooring ship

The gear consists of a dip rope, an easing-away line, a clear hawse pendant, two preventers, and deck stoppers. The clear hawse pendant and preventers consist of a $3\frac{1}{2}$ -inch wire, one end of which has a pelican hook for engaging the chain and the other end has an eye in it. To this eye is shackled the block of a heavy twofold purchase. The preventers are similarly constructed. The dip rope is made in two parts: The

outer part is a 3-inch wire about 7 fathoms long and shackled to the lee chain. The inner part is a 7-inch manila line which is led to a winch.

In this method a preventer hawser is attached to each chain. (See fig. 241.) When a sufficient amount of the lee chain (port) is hove in to go around the bow the clear hawse pendant and preventer are made fast by their pelican hooks as shown in the diagram. These two lines hold the chain while it is being unshackled. The other preventer and a deck stopper are secured to the riding chain to hold it while putting on the mooring swivel. It is made fast forward of the 45-fathom shackle.

As soon as the swivel is put on the riding chain the strain of the chain is put on the anchor engine. The deck stopper and preventer are released by means of their slip hooks. The remainder of the operation for mooring has been described.

CHAPTER 50

ARTILLERY; SCHOOL OF THE PLATOON; SERVICE OF THE PIECE IN BOATS; LAND- ING THE PIECE

ARTILLERY; SCHOOL OF THE PLATOON

Coxswains must know all of chapter 40, Part III, in addition to this chapter.

PLATOON TO THE FRONT

(1) The drag being manned: 1. **Platoon to the front, 2. MARCH.** At the first command, men drop toggles and unsling arms; even-numbered dragmen stand fast, odd-numbered dragmen step-into place ahead of their toggle mates, forming a normal infantry platoon faced by the flank; the gun squad closes and takes proper position in rear of drag squads; the 1 p. os. take post as leading and rear guides.

(2) At the second command, the platoon executes column right, the guide taking the half step. When the rear guide has completed the turn the pt. c. commands: 1. **Platoon, 2. HALT; 3. Left, 4. FACE.**

(3) The pt. c. dresses the platoon to the right, if in a single company; to the center, or toward the colors, if in battalion; and then takes his post 3 paces in front of the center of the platoon.

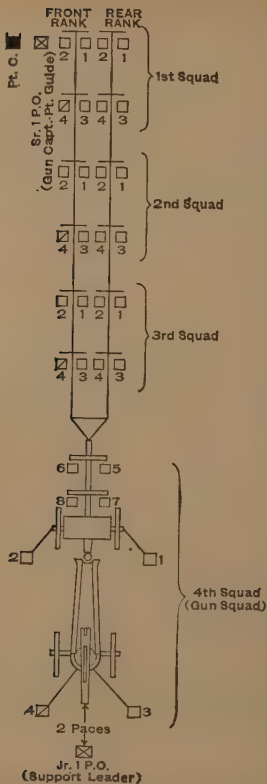


FIG. 242.—Platoon at the drag

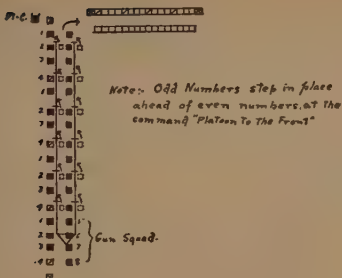


FIG. 243.—Platoon to the front

TO MAN THE DRAG

The platoon being to the front: 1. Man the drag,
2. **MARCH.** (1) At the first command, the platoon faces to the left and slings arms.

(2) At the second command, the platoon changes direction to the left along the drag, and odd numbers oblique to the left into position. The dragmen halt at their stations, face to the front, and pick up the toggles. The p. os. and men of the gun squad take their posts.

When the drag is manned the platoon executes the halt, rests, steps, and marchings, resumes attention, changes direction slightly, obliques, and resumes the direct march, as prescribed for infantry, with the modifications noted below:

(1) In executing halt, Nos. 1, 2, 3, 4 check the motion of the piece and limber; the drag leaders stretch taut the drags.

(2) In incline to the right (left), the drag leader take the new direction followed by the other members.

(3) In right (left) oblique, the movement is executed in the same manner as the incline, except that the change is 45° .

TO CHANGE DIRECTION

The drag being manned, marching or at a halt.
1. Right (left) turn (or half turn), 2. **MARCH.**

(1) **With limber.**—At the second command the leaders turn to the right in double time, gaining ground so that the piece turns in a circle of 3 yards radius; the other men so regulate their step as to complete the movement at the same time as the leaders.

(2) Upon the completion of the turn, the men take up the march in the same cadence as before the turn.

(3) **Without the limber; modifications.**—The leaders turn to the right in double time, leaving the drag slack; the other numbers so regulate their step as to complete the movement with the leaders; 1 and 2 raise the trail until the trail wheel is well clear of the ground, and turn the piece, assisted by 3 and 4 at the check rope.

(4) In any case, the dragmen and gun squad must be careful not to attempt to turn the piece too soon, or, by pushing on the dragrope, force the drag leader to take a faster gait than double time. See Figure 24.

TO MARCH TO THE REAR

The drag being manned: 1. Right (left) about, **MARCH.** Executed as prescribed for Right (left) turn except that the change of direction is 180 degrees instead of 90 degrees.

TO MOVE THE PIECE A SHORT DISTANCE BY HAND

The drag being manned: 1. **Rear** by hand, 2. **MARCH**. At the second command, all the men face to the rear, those at the piece and limber moving them backward until the command **HALT** is given, when all face to the front. If necessary, men from drags may be detailed to assist on wheel drags of piece and limber.

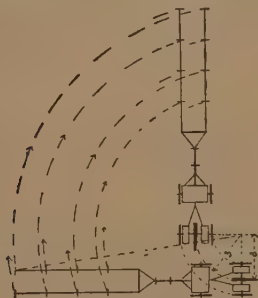


FIG. 244.—Right turn

Being in battery: 1. **Front** (rear) by hand, 2. **MARCH**.

At the second command, the gun squad moves the piece and then the limber as directed; after which 5, 6, 7, and 8 move the ammunition boxes.

TO PREPARE FOR ACTION

The drag being manned, the piece is swung with the muzzle pointed in the desired direction, if not already there.

The pt. c. then commands: 1. In battery, 2. **MARCH**

(1) **With limber.**—At the first command, 1 and 2 unhook trail of piece from limber, 3 and 4 assisting; and 6 unhook dragropes from limber; all dragmen drop the drag; the rear squad of dragmen drop back and prepare to shift the limber; 5, 6, 7, and 8 drop back to the piece; dragmen, except the rear squad, unsling arms; odd numbers step into place as at **Platoon to the front** forming column of twos; the junior 1 p. o. becomes support leader and takes post abreast the drag leaders; the senior 1 p. o. becomes gun captain and prepares to supervise placing the limber and getting ready for action.

(2) At the second command, or as soon as practicable, if the command **MARCH** has already been given, the rear squad of dragmen swing the limber into position, 1 foot to the left of the piece, with the axle 1 foot to the rear of the axle of the piece, pole pointing to the front; then take post in rear of other squads of dragmen. The support leader conducts the supports to the rear (for drill, 30 paces in rear of the piece), change direction to the left, halts the support, faces them to the front, and deploys them on the right squad; 5 and 6 take off left ammunition boxes from the piece; 7 and 8 take off right ammunition boxes and place them on the ground in one row in rear of and close to the limber; all the members of the squad then complete preparation for action; the gun captain takes station 2 paces in rear of the limber.

(3) When no ammunition is carried on the piece, 5 and 6 stay with the limber, but are assisted by the rear dragmen; 7 and 8 assist in placing trail and bedding spades. (See fig. 245.)

(4) **Without limber; modification.**—At the first command the dragropes are dropped in place, the span is unhooked by Nos. 7 and 8, and span and cross bar

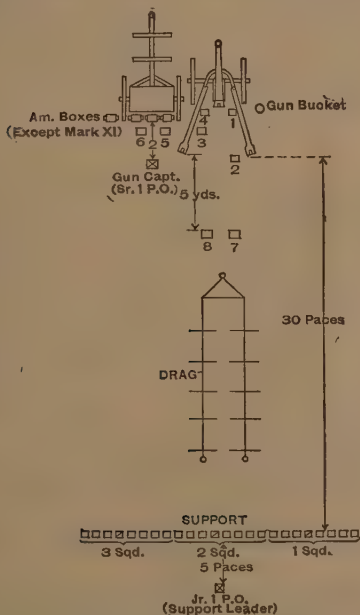


FIG. 245.—Platoon in battery

placed clear of the trail. At the second command, 5, 6, 7, and 8 remove boxes from the piece and place them to the left of the piece; 1 and 2 unship trail wheel.

All squads of dragmen are conducted to the rear once. Other stations and movements are the same with the limber.

(5) If the rifles of the gun squad interfere with their duties, they may be laid or stacked clear of the piece before or after casting the piece loose.

(6) If desired, 7 and 8 may be directed to coil down the dragropes.

TO MAN THE DRAG

Being in battery: 1. **Man the drag**, 2. **MARCH**.

(1) **With limber.**—At the first command the support is assembled and arms slung. 1, 2, 3, and 4 prepare the piece and accessories for the march and for limbering up; 5, 6, 7, and 8 replace ammunition boxes on the piece and limber, and prepare the limber for march.

(2) At the second command the supports are conducted to the drag, in double time; the rear squad assists 5, 6, 7, and 8 to place the limber in position, and leads out the drag (if necessary); 1 and 2 hook the trail to the limber; 5 and 6 hook the drag ropes, the dragmen pick up and stretch taut the drags.

(3) **Without limber; modifications.**—Nos. 7 and 8 lead out the dragropes; 5 and 6 hook dragropes to the trail; 1 and 2 raise trail and secure trail wheel in place.

SERVICE OF THE PIECE IN BOATS—LANDING THE PIECE

Field artillery is not suitable for firing from boats. It is landed after the beach has been cleared of the enemy by the infantry and machine guns, assisted by the batteries aboard ship.

The heaviest motor launches are used in landing the piece. The method will depend a great deal upon the

conditions ashore where the piece is to be landed. Putting the piece into the boat from the ship is ordinarily a very simple problem. The piece and the limber are each fitted with heavy straps about the axles, and hoisted into the boat with the crane or one of the boat davits. The preparations in the boat for receiving the piece will depend on how it is to be landed from the boat to the beach. If a crane is available ashore, no preparations except to get clear space in the boat for the piece and limber will be required. If a dock is available ashore, but no cranes, then spars, tackles, and guys for rigging a shear on the dock should be provided in the boat for hoisting the piece on the dock. If the piece has to be landed on a sloping beach, arrangements must be made in the boat to haul the piece out. Planking, properly supported, should be provided for hauling the piece over the stern, or bow, with the additional planking and supports to lead from the boat to the beach. In large boats arrangements can be made to land the piece over the side.

TO DISEMBARK 3-INCH RAPID-FIRE GUN

(In a heavy surf or where the landing has been found by previous reconnaissance to be difficult)

In places where there is a heavy surf the gun is carried ashore by means of a transporting spar. This spar is about 12 feet long and has fitted to it two grommets for toggling it to the gun, one forward of the recoil-cylinder, and the other abaft. These grommets must be fixed firmly in position on the spar to prevent any longitudinal motion. In securing the spar to the gun, the toggles are twisted tightly and if the surf be very heavy extra lashings are passed around the spar and gun.

In the event of a regular transporting spar not being provided, a boat's mast may be used in its place, and the gun lashed to the mast by means of the halliard or sheets or other gear at hand. As soon as the boat has reached the beach the piece is landed as follows:

(a) On reaching the shore, 1, 2, 3, 4, secure the transporting spar to the gun; 1 removes the sight and places it in tool box; 2 sees that the lever pin is in; 3 and 4 unkey the cap squares.

(b) The reserves deposit their rifles in the stern sheets, then pass forward, and man the forward end of the transporting spar. 1, 2, 3, 4, 11, 12 in the boat man the after end of spar; 3 and 4 raise the cap squares. All the men on the spar lift the gun clear of the mount, passing it forward carefully over the bow, then the inner end of spar is rested on the gunwale, attended by 7 and 8, while 1, 2, 3, 4, 11, 12 jump overboard and again man the rear end of the spar, carrying the gun to the beach; 5, 6, 7, 8 carry the wheels on shore; 13, 14, 15, 16 raise the carriage from the stern sheets and get it over the gunwale in the most convenient manner, then carry it to the position of the gun, where the carriage is assembled and the gun mounted; 5, 6, 7, 8, 13, 14, 15, 16 return to the boat for ammunition boxes and dragropes, and the support and reserve return for their rifles, sling arms, and the dragropes are manned or the piece placed in battery according to circumstances.

If there should be much surf, or a lateral current, an anchor should be gotten out astern before striking the beach, in order to prevent the boat from drifting broadside and to hold it "bows on" to the shore.

It will be found more convenient to secure the transporting spar to the gun on board ship and whip both together into the boat, securing the gun amidships

fore and aft, spar on top, the carriage, wheels, and boxes being stowed in the stern sheets.

When the limber is used with 3-inch rapid-fire gun, it may be stowed in the boat and handled like the carriage. In handling, the carriage follows the gun out of the boat; then the dragmen return for the limber and ammunition boxes. Gun, carriage, and limber may be transported to shore in a motor launch; the gun amidships fore and aft, carriage and limber dismounted and stowed aft.

LANDING THE GUN IN A SMOOTH SEA

If the sea is smooth, the landing easy and protected, and it is necessary to get the pieces quickly on shore and into action, the following method is preferable: Provide 4 planks 10 feet long, about 1 foot wide and 2 inches thick, fitted with 2-inch ledges or combings on either side. Two of these may be placed fore and aft in the boat, the width of the tread of piece, with the forward ends blocked up on the bows to the height of the gunwale; or the planks may be blocked up when the shore is reached. Land the gun and carriage intact, except ammunition boxes, muzzle forward, at the after end of the tracks or skids, and secure in place. The limber may be placed abaft of the gun, or transported in another boat. Beach the boat bows on; place the second two planks as continuations of those in the boat to the shore, securing the inner ends by lashing. Get the gun along the skids and over the bow muzzle first, then ease out with one drag, hooked to the trail. A short plank or spar placed across the skids, first in-board, then across those leading ashore, just forward of the trail wheel and held in place by a man on either side, will take the weight of the trail and slide down, following the gun.

If the boat is narrow and the stem would take the axle and prevent the gun going over the bow easily or there would be difficulty in securing the shore skids to the gunwhale forward, land the gun muzzle aft, limber forward of it; place the boat skids with after ends blocked up to the height of the stern sheets; back the boat in, holding or anchoring the boat, stern on to the beach; place the shore skids over the stern and proceed as before, getting the gun ashore.

A modification of this method may be used with the boat well listed broadside on to the beach, the gun and carriage being skidded bodily ashore upon the planks provided.

CHAPTER 51

SMALL ARMS; DETAILS OF INDIVIDUAL AND COLLECTIVE FIRING

SMALL ARMS

Coxswains must know all of chapter 41, Part III, in addition to this chapter. Chapter 41 gives in detail the parts of the rifle and pistol used in the Navy and detailed instruction in positions, aiming, and firing.

DETAILS OF INDIVIDUAL AND COLLECTIVE FIRING

Notes on winds.—The wind sweeps the bullet with it to the right or left and to a varying extent, depending upon the range, the time during which the bullet is in flight, and the strength and direction of the wind. The horizontal clock system is used in describing the direction of the wind. The firing point is considered as the center of the clock and target is at 12 o'clock. Winds from ahead are 12 o'clock winds; from astern, 6 o'clock winds; from the right at right angles to the line of fire 3 o'clock winds. A wind that is frequently changing its direction back and forth from right to left is called a "fishtail" wind. The worst kind of a wind in which to shoot is a fishtail wind at 12 or 6 o'clock.

Correcting for wind.—The rear sight is moved against the wind an amount calculated to compensate accurately for the effect of the wind. Thus, for a 3 o'clock wind the sight is moved to the right; for a 9 o'clock wind to the left; for a 6 o'clock wind the elevation

may be slightly decreased; for a 12 o'clock wind slightly increased. Before the correction can be made however, the "zero" of the rifle must be known. This can best be accomplished on a calm overcast day when there is no wind to deflect the bullet and no sun to cast disturbing shadows on the sight. If after careful trial the center of the target is hit when the wind is set at, say, one-half left, then this is the zero of the

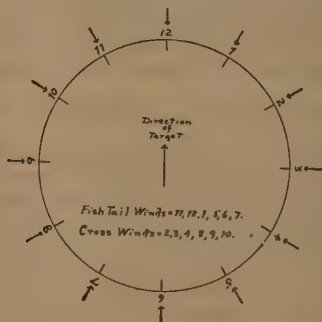


FIG. 240.—Winds

rifle. This point must be noted, and becomes the point from which all corrections are made. Thus if the zero is one-half left and the wind calls for a correction of one-half right, the wind gauge will read zero when set for the correction. If the wind calls for one-half left, however, the wind gauge will read 1 point left when the correction is applied. The zero is never great enough to throw the shot off the target, but it must be known for fine shooting.

The windage rule.—If the direction of the wind is determined by a clock or flags and its velocity by an anemometer, and if these two factors are determined at points in the path of the bullet, the wind to be allowed can be determined by the wind rule. The range in yards multiplied by the velocity of wind and divided by 1,000 equals the number of quarter points to allow for a 3 or 9 o'clock wind. Example: At 500 yards the wind is blowing 8 miles an hour from 3 o'clock. Then $\frac{500 \times 8}{1,000} = 4$ quarter points, or 1 point windage. The sight should be set with 1 point right windage for the first shot.

The quarter point rule for changing windage (how to change windage in slow fire after hitting the target).—Changing the windage one-fourth point moves the bullet 1 inch for every 100 yards of range. For example:

One-fourth point at 200 yards moves the bullet 2 inches on the target.

One-fourth point at 300 yards moves the bullet 3 inches on the target.

One-fourth point at 400 yards moves the bullet 4 inches on the target.

One-fourth point at 500 yards moves the bullet 5 inches on the target.

One-fourth point at 1,000 yards moves the bullet 10 inches on the target.

The square rule for changing elevation (how to change elevation after hitting the target).—Changing the elevation 100 yards at any range moves the hole in the target a distance in inches equal to the quotient of the square of the range divided by the square of the change in elevation.

Changing the elevation 100 yards at any range gives change on the target equal to the number of inches of the square of the range.

Example: At 200 yards, changing the elevation 100 yards gives 4 inches change on the target; at 300 yards 9 inches; 500 yards, 25 inches; 600 yards, 36 inches; 1,000 yards, 100 inches.

This rule is not exact, but is close enough for all purposes.

Do not make changes in windage or elevation boldly. Make a little less change than what the rule would call for. In practice, changes seem to carry the bullet more than expected. Change cautiously. In case of doubt, favor the smaller change, and unless quite sure of the hold or pull, or unless changes in conditions suggest it, do not change for one shot a little off.

Always aim the same way and control the point of hit by changing elevation and windage.

The effect and use of mirage.—This so-called mirage is really not a mirage at all, but rather the heat waves that rise off the earth. The mirage itself has no effect on the bullet. Its only effect in sighting is to displace the apparent position of the bull's-eye somewhat through refraction. Its great value is in indicating the force and direction of the wind. In a high wind or on a dull day it is not apparent. In a light breeze on a bright day it is easily visible, particularly through a telescope slightly out of focus. If the wind is blowing briskly, the mirage seems to race across the range and to lie close to the ground. In a light wind the waves do not lie so close nor travel so rapidly. When there is no wind or a light wind at 6 o'clock the mirage seems to boil straight up. The skilled rifleman uses this ind.

cator to the utmost, and he finds it particularly valuable in a fishtail wind, when he watches it along his sights and fires when the conditions are the same as when he set his sight.

Light has no effect on the bullet, but it influences the point of aim somewhat. On a bright day the rifleman unconsciously holds a little closer to the bull's-eye because he can see it more clearly. Again, if a shadow is cast on the front sight, the rifleman may not see it well enough to center it properly in the peep. The influence of light is not sufficient to trouble anyone but an expert, even when the changes are quite marked. In training new men at short and mid ranges it is best not to mention the effects of temperature, humidity, barometer, light, and mirage and to concentrate on the subject of wind and the mechanical operations of sight setting.

Finding of the target at short ranges is ordinarily a simple process of setting the sight at the mark shown for the given range, and for zero wind. At long range if the target is not hit, the trouble is most likely to be found in elevation, because errors in estimating the wind are not likely to carry the shot off the target. To find the target, the first step is to set the sight as nearly as possible to the estimated elevation required. If the rifle has never been sighted in at any other range so that no estimate can be made, then the sight should be set at the mark corresponding to the given range. If the first shot misses, the elevation should be increased by 50 yards. If the second shot misses, the elevation for the first shot should be decreased by 50 yards, and so on, alternately increasing and decreasing the elevation by 50-yard increments from the original elevation.

TARGETS

Figure 247 shows the target used for pistol firing. For the marksman course target A is used, which has a 10-inch bull's-eye. The inner 12-inch bull counts 5, the remainder of the bull 4, the inner circle 3, the outer circle 2, and the remainder of the target 0.



FIG. 247.—Pistol target

Figure 248 shows the target used for the sharp shooter's and expert's courses. It is the same size as Figure 247. A hit in the bull counts 5, in the inner circle 4, outer circle 3, and the remainder of the target 2. A hit within the 12-inch circle in the bull is scored as a V, which is the same as 5 but is used for breaking ties. Thus if two riflemen both made perfect scores, the one having the most V's is the winner.

COLLECTIVE FIRE

The object of this course is to give officers and petty officers experience in controlling and directing fire, and to give officers and men experience in fire discipline. Collective fire will be held by squads of exactly eight firers, or by groups of such squads firing simul-

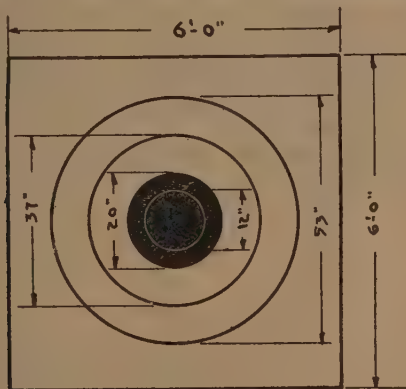


FIG. 248.—Target "B"

taneously. Each squad will be commanded by an officer or enlisted man who will not fire but who will be charged with maintaining the discipline of the firing line. When more than one squad is firing, the commands for firing may be given by the commander of the whole or by the squad commanders, as the officer in charge directs. One target will be provided for each squad.

The course will consist of the same number of shots for each man at the same ranges and from the same positions as for the skirmish. The firing will be by volleys. Thus at each range five volleys will be fired, the total number of rounds being fired is 20. There is no time limit.

The commands are:

1. Fill magazines, load and lock. Forward, **MARCH**.
2. Halt; lie down. 500 yards; windage. Set your sights; unlock pieces. At your own target, squad aim, **FIRE**. Squad aim, **FIRE** (until five volleys have been fired). After each volley the firers reload from magazines without command.
2. Fill magazines, load and lock. Forward; double time; **MARCH**.

CHAPTER 52

SIGNALS: BOAT BOOK SIGNALS; LIFEBOAT SIGNALS; BOAT RECALLS; GUARD FLAG, MEDICAL GUARD FLAG, EXPLOSIVE FLAG

A coxswain must be able to send and receive a signal by semaphore. The method of signaling in semaphore is taken up in detail in Part I, chapter 14, which should be reviewed by the coxswain. Other methods of signaling are discussed in Part III, chapter 43. The best way to become proficient is to have someone send to you every day a short message beginning at a slow speed and gradually work up to a higher. Try in your spare time to read messages being sent from ship to ship, seeing how many words you can get. You will be surprised to find out how easy it will come to you after a little practice.

LIFEBOAT SIGNALS

1. A lifeboat, lowered to pick up a man, may be directed by the following signals:

Numeral 1 flag, pull to the right of the line looking from the ship to boat.

Numeral 2 flag, pull to the left of the line looking from the ship to boat.

Numeral 3 flag, pull directly away from the ship.

Numeral 4 flag, pull directly toward the ship.

Numeral 6 flag, return to ship.

2. By night the position of the man will be indicated by a searchlight beam.

3. Night signals to be used by the lifeboat are:

Blue light, "Have picked up man."

Red light, "Need assistance."

Green star, "Can not find man."

BOAT SIGNALS

All signals used for boats are three-letter signal containing the letter **E**. They are placed at the back of the Boat Book.

BOAT RECALL

The 6 flag hoisted alone is the General recall for all boats away from the ship. Its night equivalent as General recall is six long flashes. Over numeral pennants as, 6 flag 1 pennant, recalls the admiral's barge. Over negative over numeral pennants, as, 6 flag **N** flag 1 pennant, recalls all boats except the admiral's barge.

Under negative and over numeral pennants, as, **N** flag 6 flag 1 pennant, it directs the admiral's barge not to return until recalled.

BOAT CALLS

This should not be confused with Recall. This signal is hoisted for the purpose of sending a message to the boat. The call for ship's boats is the pennant **Easy**.

The complete call of a boat consists of the call of the ship over the call of its boat. Referring to the table below it will be seen that the call of a first dinghy is **E** flag over 3 pennant 9 pennant. The complete call will include the ship call, thus any ship may call the first dinghy of the *Idaho* (whose call is B42) by hoisting **B** flag 4 pennant 2 pennant over **E** flag 3 pennant 9 pennant.

When a ship calls its own boats the ship call is generally omitted.

E flag 1 pennant_____	Admiral's barge.
E flag 2 pennant_____	Chief of staff's barge or gig.
E flag (3 to 5) pennant_____	Staff gigs or motor boats.
E flag 6 pennant_____	Captain's gig.
E flag (7 to 10) pennant_____	Motor boats.
E flag (11 to 22) pennant_____	Motor launches.
E flag (23 to 26) pennant_____	Motor whaleboats.
E flag (27 and 28) pennant_____	Cutters.
E flag (29 to 38) pennant_____	Whaleboats.
E flag (39 and 40) pennant_____	Dinghies or wherries.
E flag (43 and above) pennant_____	Miscellaneous.

A division call hoisted over **Easy** calls all the small boats of that division.

A squadron call hoisted over **Easy** calls all the small boats of that squadron.

The coxswain should acquaint himself with the recall and call of his boat. A small diagram showing the hoists for these two calls is usually placed in every boat.

GUARD FLAG

The guard flag is the **zero flag**. It is flown at the fore from sunrise to sunset by ships having the guard duty, except flagships or ship of the senior officer present. It is also flown in the bow of small boats performing guard boat duty.

The medical guard flag is flag **Mike**. It is flown from sunrise to sunset at the foretruck by ships having the medical guard except when the medical guard ship also has the regular guard duty, in which case it is not flown.

THE EXPLOSIVE FLAG

This is the flag **Baker**. It is hoisted at the foretruck when handling ammunition, fuel oil, or gasoline in

large quantities. It is also displayed in the bows of all boats and lighters transporting same.

It is hoisted at yardarm of firing and towing ship during target practice and by ships while standardizing propellers.

It is hoisted at the fore during full-power runs half-masted during endurance and smoke-prevention runs.

Hoisted at the yardarm at the dip it indicates that the ship is off the range or not ready for firing.

Hoisted at the fore or other conspicuous point of hoist by ships engaged in mine laying, mine sweeping or diving operations.

See plates in front of book for illustrations of these flags.

PART FIVE
PHYSICAL DRILLS

CHAPTER 53

PHYSICAL DRILL WITH ARMS

(NOTE.—Text based on Manual of Physical Drill, by Chaplain W. O. Holway, United States Navy; from Landing Force Manual, 1927)

General rules.—(1) All movements in this section are in four counts and, except coming to ready, are performed two (or four) times.

(2) The exercises may be executed by command or to music, or silently, following the motions of a leader, and they may be discontinued by the command **Halt**, when the ready will be resumed.

(3) Take intervals or distances as prescribed in the Infantry regulations, in Part I.

COMING TO READY

Commands: Come to ready—1, 2, 3.

1. Raise the piece with the right hand; grasp it with the left at the height of the right shoulder, knuckles toward the body. With the right hand grasp the small of the stock, the forefinger under the guard. (See fig. 249.)

2. Let the piece drop in front of the body to a horizontal position, slings down; keep the body erect. (See fig. 250.)



FIG. 249.—Coming to ready. First position



FIG. 250.—Coming to ready. Second position



FIG. 251.—Coming to ready. Third position

3. Raise the piece horizontally to the height of the shoulders, slings up; at the same time move the left foot to the left about 12 inches. (See fig. 251.) Keep the chest out and the shoulders well back. This position is ready and is the starting point of all the movements under arms.



FIG. 252.—Down and forward. End of first count

FIRST EXERCISE—DOWN AND FORWARD

Special action.—The muscles of the hips, back, and arms. Commands: Down and forward—1, 2, 3, 4; 1, 2, 3, 4, etc.

1. From ready, lower the piece horizontally to the insteps; keep the arms and knees straight (if possible). (See fig. 252.)



FIG. 253.—Down and forward. End of third count

2. Back to ready, chest out, elbows back.
3. Push piece horizontally forward. (See fig. 253.)
4. Back to ready.

SECOND EXERCISE—FORWARD AND UP

Special action.—The muscles of the arms and of side walls of the chest. Commands: Forward and up—1, 2, 3, 4; 1, 2, 3, 4, etc.

1. From ready push piece horizontally forward as in the last exercise.
2. Back to ready, chest out, elbows back.
3. Push the piece to high vertical, keeping it horizontal and expanding chest. (See fig. 254.)
4. Back to ready.

THIRD EXERCISE—UP AND SHOULDERS

Special action.—The muscles of the arms and of the side and front walls of the chest.

Commands: Up and shoulders—1, 2, 3, 4; 1, 2, 3, 4, etc.

1. From ready push the piece to vertical, as in last exercise.
2. Lower piece to back of shoulders, head up, elbows well back. (See fig. 255.)
3. Up again to vertical.
4. Down to ready.

FOURTH EXERCISE—SIDE PUSHES

Special action.—The rotary muscles of the body and thighs; the loin muscles. Commands: Side pushes—1, 2, 3, 4; 1, 2, 3, 4, etc.

1. From ready push the piece horizontally to right side, twisting the body, keeping the eyes on the piece, but keeping the heels firmly on the ground. (See fig. 256.)
2. Back to ready, chest out, elbows back.
3. Push the piece to the left side.
4. Back to ready.

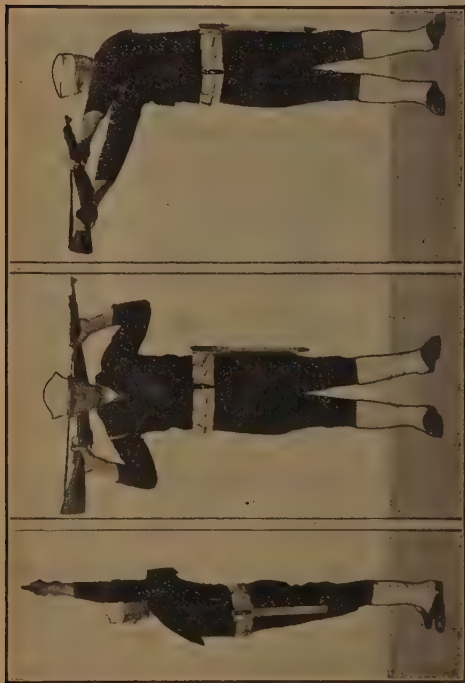


FIG. 254.—Forward and up. End of third count

FIG. 255.—Up and shoulders. End of second count

FIG. 256.—Side pushes. End of first count

FIFTH EXERCISE—DIAGONAL LUNGES

Special action.—The muscles of the arms, back, and legs. Commands: Diagonal lunges—1, 2, 3, 4; 1, 2, 3, 4, etc.

1. From ready lunge diagonally to the right about 6 inches with the right leg; at the same time bring the piece up horizontally to 45° . The left foot should be flat and the eyes directed to the piece. (See fig. 257.)



FIG. 257.—Diagonal lunges. End of first count

2. Back to ready, chest out, elbows back.
3. Lunge to the left with left leg, as above.
4. Back to ready.

SIXTH EXERCISE—FORWARD LUNGES

Special action.—The muscles of the arms and legs and the side walls of the chest. Commands: Forward lunges—1, 2, 3, 4; 1, 2, 3, 4, etc.

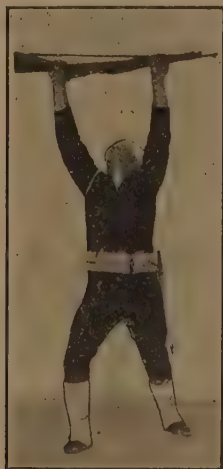


FIG. 258.—Forward lunges.
End of first count

1. From ready lunge directly to the front, about 3 inches, with the right leg, at the same time raising piece horizontally to vertical and directing the eye to the piece. Keep left foot flat. (See fig. 258.)
2. Back to ready.
3. Lunge to the front with left leg, as above.
4. Back to ready.

SEVENTH EXERCISE—FRONT SWEEPS

Special action.—All the principle posterior muscles of the body. Commands: Front sweeps, slow—1, 2, 3, 4; 1, 2, 3, 4, etc.

1. From ready raise the piece horizontally to high vertical, keeping the chest well out and emphasizing the upstretch.



FIG. 259.—Front sweeps

2. Lower the piece slowly in front semicircle to in-steps, keeping the arms straight and emphasizing the outreach. (See figs. 259 and 260.)

3. Raise the piece slowly in front semicircle to vertical.

4. Down to ready.



FIG. 260.—Front sweeps. End of second count

EIGHTH EXERCISE—OVERHEAD TWISTS

Special action.—The rotary muscles of the upper part of the body; also stimulates the venous circulation. Commands: Overhead twists; butt front—1, 2, 3, 4; Muzzle front—1, 2, 3, 4, etc.

1. From ready raise the piece overhead, at the same time twisting it until the butt points directly forward. Keep the piece horizontal. (See fig. 261.)

2. Twist the piece to the right until the muzzle points directly forward. Hold the hips firmly forward confining movements to the upper part of the body. (See fig. 262.)



FIG. 261.—Overhead twist. Butt front



FIG. 262.—Overhead twist. Muzzle front

3. Twist back till the butt points directly forward.
4. Lower the piece to ready.

1. From ready raise the piece overhead, at the same time twisting it till the muzzle points directly forward.

2. Twist the piece to the left until the butt point directly forward.
3. Twist back until the muzzle points forward.
4. Lower the piece to ready.



FIG. 263.—Side twist.
End of second count



FIG. 264.—Side twist.
End of fourth count

NINTH EXERCISE—SIDE TWISTS

Special action.—The muscles of the sides, loins, and small of the back.

(1) Commands: **Side twists**—1, 2, 3, 4; 1, 2, 3, 4, et

1. From ready drop the piece horizontally in front to position No. 2 in coming to ready.

2. Lifting the butt up, carry the piece strongly to the left side and out, muzzle pointing directly down. Keep the hips firm. (See fig. 263.)

3. Return piece to position No. 2 in coming to ready.

4. Lifting the muzzle, carry the piece strongly to the right side and out, muzzle pointing directly up. (See fig. 264.)

(2) Repeat the exercise.

(3) At the end of the ninth exercise, come to order

ARMS

CHAPTER 54

PHYSICAL DRILL WITHOUT ARMS

(Setting-up exercises; Swedish system)

NOTE.—Extracted from Manual of Athletic Requirements United States Naval Academy, by Lieut. Commander W. A. Richardson, United States Navy, Standard exercises as given throughout the United States naval service, and as adopted by many European services.

SETTING-UP EXERCISES

1. The standing position is taken on the command: **Attention!**

Heels on the same line and as near each other as the conformation of the man permits.

Feet turned out equally and forming an angle of about 45° .

Knees straight without stiffness.

Hips level and drawn back slightly; body erect and resting equally on hips; chest lifted and arched; shoulders square and falling equally.

Arms and hands hanging naturally; thumb along the seam of the trousers.

Head erect and squarely to the front, chin drawn in so that the axis of the head and neck is vertical; eyes straight to the front.

Weight of the body resting equally upon the heels and balls of the feet.

NOTE.—The position of **Attention** is a very important one, as all exercises start from this position. Instructors should criticize the position of **Attention** with such remarks as, heads up, chin in, chest high, knees straight.

SIMPLE STARTING POSITIONS OF THE ARMS

2. **Wing standing position** is taken on the command
Hips, FIRM!

The arms are bent upward and placed on the hips, fingers to the front, thumbs to the rear; palms of hands turned inward and pressing against the ridge of the hip bone; elbows pointing out to the side and slightly drawn back.

Standing position is returned to on the command
Arms downward, STRETCH!

The arms are stretched downward with force the shortest way.

Common faults:

Elbows not pointed to the side and drawn back too much.

Hands not firm on the hips.

3. **Yard standing position** is taken on the command
Arms sideways, RAISE!

The arms, fully stretched, are slowly raised sideways to the horizontal; fingers closed and the palms of hands turned downward.

Standing position is returned to on the command
Arms downward, SINK!

The arms are slowly lowered to the sides.

Common faults:

Arms not held in the horizontal position.

Chest relaxed during the movement and not held high.

NOTE.—If standing position is to be returned to quickly, command: **Attention!**

The arms are then lowered to the sides with a swing without slapping the sides.

4. **Reach standing position** is taken on command
Arms forward, RAISE!

The arms fully stretched are slowly raised forward to the horizontal; fingers closed and palms of hands turned inward toward each other.

Standing position is returned to on the command:
Arms downward, SINK!

The arms are slowly lowered forward to the sides.

If the command **Attention** is given the arms are swung down quickly as in preceding paragraph.

Common faults: As in preceding paragraphs and palms not turned inward.

5. **Bend standing position** is taken on the command:
Arms, BEND!

The arms at the elbows are quickly bent upward to the shoulders; fingers touching the point of the shoulders; elbows drawn back and down to sides.

Standing position is returned to on the command:
Arms downward, STRETCH!

The arms are stretched down to the sides with force the shortest way.

Common faults:

Shoulders not held firm. Elbows not drawn in to the sides.

Fingers not resting on the shoulders.

NOTE.—The object of the bend standing position is to raise the chest; the drawing of the arms to the sides has a tendency to do this and the result is a good brace.

6. **Forward bend standing position** is taken on the command: **Arms forward, BEND!**

The arms are bent quickly upward in front of the chest; elbows at the height of shoulders and drawn well back; fingers closed; wrist and forearm in a straight line.

Standing position is returned to on the command:
Arms downward, STRETCH!

The arms are quickly stretched downward with force to the sides.

Common faults:

Elbows not at the height of shoulders and drawn back enough.

Wrist and forearm not in straight line. Shoulders carried forward.

7. Stretch standing position is taken on the command: **Arms forward and upward, RAISE!**

The arms fully stretched are raised forward and upward in front of the body to the vertical position above the head, and are carried well back so they are in a straight line with the curve of the spine; palms of hands turned inward toward each other and arms shoulder width apart.

Standing position is returned to on the command: **Arms forward and downward, SINK!**

The arms are slowly lowered in the reverse manner to the sides.

Stretch standing position can also be taken by raising the arms sideways and upward on the command: **Arms sideways and upward, RAISE!**

The arms are raised sideways to the yard position, the hands are quickly turned upward and the movement continued upward.

Arms sideways and downward, SINK!

The arms are lowered in the reverse manner to the sides.

Common faults:

Arms not held straight and in line with the trunk.

Arms not held shoulder width apart.

8. Rest standing position is taken on the command: **Neck, REST!**

The arms are bent quickly at the elbows, carried upward the shortest way, and placed on the back of the

head with the finger tips touching each other; elbows well back, chest high, and head erect.

Standing position is returned to on the command:
Arms downward, STRETCH!

The arms are stretched downward to the sides with force the shortest way.

Common faults:

The head carried forward during the arm movement.

The elbows not carried back enough.

Fingers interlocked.

9. **Palm standing position** is taken on the command:
Hands outward, TURN!

With the arms fully stretched and held close to the body, the hands are turned outward away from the body as far as possible.

Standing position is returned to on the command:
Hands inward, TURN!

The hands are turned inward toward the body.

Common faults: Arms not held close to the body.
Shoulders carried forward.

SIMPLE STARTING POSITIONS OF THE LEGS

10. **Close standing position** is taken on the command:
Feet, CLOSE!

By slightly raising the toes from the deck and pivoting on the heels the feet are carried inward so the inner side of the feet touch.

Standing position is returned to on the command:
Feet, OPEN!

By pivoting on the heels the feet are turned out to the standing position.

Common faults:

Bending the body forward at the waist line.

Dragging the feet on the deck during the closing and opening.

11. Outward walk standing position is taken on the command: Left (right) foot outward, **PLACE!**

The named foot is placed 2 foot lengths outward in the direction that the foot is pointed, 45° angle to the front; weight of the body equally distributed on both feet and shoulders square to the front.

Standing position is returned to on the command: Feet together, **PLACE!**

By pushing from the deck with the forward foot it is carried back to the standing position.

Common faults:

Not keeping the shoulders square to the front.

Sliding the feet along the deck.

Not preserving the angle of the feet. Weight not equally distributed.

12. Forward walk standing position is taken on the command: Left (right) foot forward, **PLACE!**

The named foot is placed 2 foot lengths directly forward so that the heels are in a straight line; weight of the body equally distributed and preserving the angle of the feet.

Standing position is returned to on the command: Feet together, **PLACE!**

The feet are placed together as in preceding paragraph.

Common faults: Besides those in preceding paragraph, the foot not placed directly forward.

13. Outward lunge standing position is taken on the command: Left (right) foot outward, **LUNGE!**

The named foot is carried outward 3 foot lengths in the same direction, the forward knee is bent to a right angle and directly over the foot, both feet flat on the deck; rear leg, trunk, and head in a straight line, with the upper body inclined forward and shoulders square to the front as in the standing position.

Standing position is returned to on the command:
Feet together, PLACE!

By pushing off with the forward foot it is carried back to the standing position.

Common faults:

Not stepping out 3 foot lengths and feet not flat on the deck.

Rear leg and body not in a straight line.

14. Forward lunge standing position is taken on the command: **Left (right) foot forward, LUNGE!**

The named foot is carried 3 foot lengths forward, the knee bent to a right angle as in preceding paragraph, shoulders square to the front; rear leg and trunk in a straight line; feet flat on the deck.

Standing position is returned to on the command:
Feet together, PLACE!

The foot is carried back to the standing position as in preceding paragraph.

Common faults: Besides those in preceding paragraph, the foot not carried straight forward and the rear heel raised from the deck.

15. Stride standing position is taken on the commands (three methods):

(a) **Left (right) foot sideways, PLACE!**

(b) **Feet sideways, PLACE!**

(c) **Feet sideways with a jump, PLACE!**

(a) The named foot is carried directly sideways 2 foot lengths and placed on the deck; equal weight on both feet.

(b) The left foot is carried 1 foot length to the left, and the right 1 foot length to the right; the distance between the heels should be at least 2 foot lengths.

(c) By pushing off from the deck and springing upward the legs are parted sideways and the feet

placed on the deck; the distance between the heels should be at least 2 foot lengths.

Standing position is returned to on the commands:

(a-b) Feet together, **PLACE!**

(c) Feet together with a jump, **PLACE!**

(a) The foot which was placed sideways is carried back to the standing position.

(b) Two motions.

The left foot is carried in 1 foot length and the right foot is carried in likewise to the standing position.

(c) By pushing off from the deck both feet are carried inward to the standing position.

Common faults:

Not making the stride long enough.

Body swaying and sliding feet on deck.

16. Toe standing position is taken on the command: **Heels, RAISE!**

With the heels together and the arms held to the sides, the body is raised as high as possible on the toes, maintaining the balance; ankle joints stretched; chest held high and head erect.

Standing position is returned to on the command: **Heels, SINK!**

The heels are lowered to the deck.

Common faults: Body swaying and heels not held together.

17. Spring standing position is taken on the commands: **Heels, RAISE!** (see preceding paragraph). **Knees, BEND!**

Maintaining the balance the knees are bent downward until the upper leg and lower leg are at right angles to each other; the position of the rest of the body unaltered.

Standing position is returned to on the commands: **Knees, STRETCH!**

Keeping the heels clear of the deck the knees are stretched upward.

Heels, SINK!

The heels are lowered to the deck.

Common faults:

Heels lowered during the knee bending and stretching.

Body swaying forward or backward and not maintaining the balance.

18. **Spring sitting position** is taken on the commands: **Heels, RAISE! Knees to sitting, BEND!**

The knees are bent as in the preceding paragraph, but with the difference that the knees are bent still further downward until the thighs touch the heels.

Standing position is returned to as in preceding paragraph on the commands: **Knees, STRETCH! Heels, SINK!**

Common faults: Besides those in preceding paragraph, knees not bent enough.

STARTING POSITIONS OF THE TRUNK

19. **Stoop standing position** is taken on the command: **Trunk forward, BEND!**

With the knees straight and the arms held to the sides, the trunk is slowly lowered forward to the horizontal so that the trunk and legs are at right angles to each other.

Standing position is returned to on the command: **Trunk upward, STRETCH!**

The trunk is raised slowly upward to the standing position.

Common faults:

The back rounded and head allowed to fall forward

The knees not held straight and chin not drawn in

20. Arch standing position is taken on the command

Trunk backward, **BEND!**

With the knees straight and the arms held at the sides, the trunk is bent slowly backward; the bending takes place in the upper spine; the chest should be held high and the chin drawn in.

Standing position is returned to on the command

Trunk upward, **STRETCH!**

The trunk is raised slowly upward to the standing position.

Common faults:

The bending taking place in the lower spine instead of the upper spine.

The chin not drawn in and the head allowed to fall backward.

21. Twist standing position is taken on the command:

Trunk to the left (right), **TWIST!**

With the arms held to the sides, the trunk is slowly twisted to the named side as far as possible, keeping the hips square to the front. The twisting takes place above the hips and not in the thighs.

Standing position is returned to on the command:

Trunk forward, **TWIST!**

The trunk is slowly twisted forward to the standing position.

Common faults:

The twisting taking place in the thighs instead of the trunk.

The hips not held square to the front.

22. Sidebend standing position is taken on the command: Trunk to the left (right), **BEND!**

With the arms held to the sides, chin drawn in, and the feet firm on the deck, the trunk is slowly bent to the named side as far as possible. The position of the head is unaltered to the trunk.

Standing position is returned to on the command:
Trunk upward, STRETCH!

The trunk is slowly raised upward to the standing position.

Common faults:

Raising the opposite foot to the side of the bending off the deck.

Not keeping the head in line with the curve of the spine.

Twisting the trunk during the side bending.

MISCELLANEOUS STARTING POSITIONS

23. **Stoop falling position** is taken on the command:
Stoop falling, PLACE! (Two motions:)

1. The knees are bent to sitting, as in paragraph 18, and the hands are placed on the deck between the knees, keeping them shoulder width apart; the head is held high and the back straight. The name of this position is called crouch sitting position.

2. The weight is taken on the arms and the legs are stretched backward with force, the feet placed on the deck so that the body is in an inclined position, the arms are held straight, the legs, trunk, and head in a straight line.

Standing position is returned to on the command:
ATTENTION! (Two motions:)

1. By pushing off with the feet the legs are brought forward to crouch sitting position.

2. By pushing off with the hands and stretching the knees, the body is straightened up to the standing position.

Common faults:

In crouch sitting: The back rounded and the head carried forward.

In stoop falling: Legs and trunk not in a straight line, allowing back to sway or raising hips.

Sliding feet along the deck.

24. **Crouch sitting position** is taken on the command **Crouch sitting, PLACE!**

The knees are bent and the hands placed on the deck as in preceding paragraphs.

Standing position is returned to on the command **ATTENTION!**

Common faults. (See preceding paragraph.)

25. **Back stoop falling position** is taken on the commands (two motions):

1. **Stoop falling, PLACE!** (See preceding paragraph.)

2. **Change to back stoop falling on left (right) arm, TURN!**

By keeping the arms straight, the body is turned on the named arm and the free hand placed on the deck about 18 inches from the other hand. The body is not in an inclined position, with the trunk, legs, and head in a straight line, as in the standing position. The back of the body is toward the deck.

Standing position is returned to in two motions on the commands:

1. **Change to stoop falling on left (right) arm, TURN!**

The body is turned on the named arm back to the stoop falling position.

2. **ATTENTION!** (See preceding paragraph.)

Common faults:

Besides those in paragraphs 19 and 24 the arms not held straight and the body allowed to hinge at the waistline.

The head carried forward and not in line with the trunk.

26. **Side falling position** is taken on the commands (two motions):

1. **Stoop falling, PLACE!**

2. **Change to side falling on left (right) arm, TURN!**

The body is turned on the named arm until the side of the body is turned toward the deck, the free arm is held to the side and the supporting arm is held straight. The body should now be in an inclined position, with the head, trunk, and legs in a straight line as in the standing position.

Standing position is returned to in the reversed manner in two motions, on the commands:

1. **Change to stoop falling on left (right) arm, TURN!**

2. **ATTENTION!**

Common faults:

The body and arm not held straight.

Chin not drawn in and head carried to the side.

Legs not held together as in standing position.

27. **Lying position** is taken on the commands (two motions):

1. **Stoop falling, PLACE!** (See par. 23.)

2. **Change to lying on left (right) arm, TURN!**

The body is turned on the named arm to the back stoop falling position, as in paragraph 25, then immediately lowered to the deck so that the back of the body is flat on the deck with the arms to the sides and the legs together.

Standing position is returned to in the reversed manner, in two motions, on the commands:

1. **Change to stoop falling on left (right) arm, TURN!**

2. **ATTENTION!**

Common faults: Besides those in paragraphs 23 and 24, the legs apart and arms not at the sides.

28. Forward lying position is taken on the commands
(Two motions:)

1. Stoop falling, **PLACE!** (See par. 23.)

2. Change to forward lying, **PLACE!**

The body is quickly lowered to the deck and the arms lowered to the sides. The body should now be in a horizontal position on the deck with the chin drawn in and the legs together.

Standing position is returned to in the reversed manner in two motions on the commands: **Change to stoop falling, PLACE! ATTENTION!**

NOTE.—The above position can also be taken on the command:

Forward lying, PLACE!

Common faults:

The front of the body not flat on the deck and arms not held to sides.

Legs apart and chin not drawn in.

29. Stride kneeling position is taken on the commands
Stride kneeling, PLACE!

(Two motions:)

1. The right knee is bent and the left knee placed on the deck about 6 inches to the left of the right foot half kneeling.

2. The right knee is placed on the deck about 6 inches to the right, so that the distance between the knees is about 12 inches. The body from the knees up should be held straight and heels together.

Standing position is returned to on the command:
ATTENTION!

(Two motions:)

1. The left knee is raised and the foot placed on the deck opposite the right knee, both hands are placed on the left knee.

2. By stretching the knees the body is raised to the standing position and the arms lowered to the sides.
Common faults:

Hinging of the body at the waistline.

Touching the deck with the hands in taking the position.

Heels not together when in the kneeling position.

COMBINED STARTING POSITIONS OF THE ARMS AND LEGS

30. Wing stride standing position is taken on the commands: Left (right) foot sideways and hips, **FIRM!**

The named foot is placed sideways, as in paragraph 15(a), and at the same time the hands are placed on the hips, as in paragraph 2.

Standing position is returned to on the commands: Feet together and arms downward, **STRETCH!**

The foot is carried in to the other foot and at the same time the arms are stretched down to the sides.

Common faults: (See pars. 2 and 15.)

30a. Bend toe standing position is taken on the commands: Heel raising and arms, **BEND!**

The heels are raised, as in paragraph 16, and at the same time the arms are bent upward to the bend position, as in paragraph 5.

Standing position is returned to on the command: Heels sinking and arms downward, **STRETCH!**

The heels are lowered to the deck and at the same time the arms are stretched down to the sides.

Common faults: (See pars. 5 and 16.)

31. Rest outward walk standing position is taken on the command: Left (right) foot outward and neck, **REST!**

The named foot is placed outward, as in paragraph 11, and at the same time the arms are bent upward to the rest position, as in paragraph 8.

Standing position is returned to on the command **Feet together and arms downward, STRETCH!**

The foot is carried back to the other foot and at the same time the arms are stretched down to the sides.

Common faults: (See pars. 8 and 11.)

32. Stretch outward lunge standing position is taken on the command: **Left (right) foot outward lunging and arms forward and upward, RAISE!**

The named foot is shifted outward, as in paragraph 13, at the same time the arms are raised forward and upward in front of the body to the vertical position above the head, as in paragraph 7.

Standing position is returned to on the command **Feet together and arms forward and downward, SINK!**

The advanced foot is carried back to the other foot and at the same time the arms are lowered forward and downward to the sides.

Common faults: (See pars. 7 and 13.)

NOTE.—The stretch position can also be taken by raising the arms sidewise and upward. (See par. 7.)

EXERCISES OF THE LEGS CARRIED OUT IN THE SIMPLE STARTING POSITIONS

33. Wing standing: Heel raising.

The starting position is taken, as in paragraph 2 on the command: **Hips, FIRM!**

The exercise is carried out, as in paragraph 16, on the commands: **Heels, RAISE! Heels, SINK!**

Then the heel raising is carried out by numbers; a count "One" the heels are raised, at count "Two" they are lowered, and so on.

Common faults: (See pars. 2 and 16.)

34. Yard stride standing: Heel raising.

The starting position is taken on the command: **Left (right) foot sideways and arms sideways, RAISE!**

The named foot is shifted sideways, as in paragraph 15 (a) at the same time the arms are raised sideways, as in paragraph 3.

The exercise is carried out as in paragraph 16.

Standing position is returned to in the reversed manner on the command: **Feet together and arms downward, SINK!**

Common faults: (See pars. 3 and 15.)

35. Wing, outward walk standing: Heel raising.

The starting position is taken on the command: **Left (right) foot outward and hips, FIRM!**

The named foot is placed outward, as in paragraph 11, and at the same time the hands are placed on the hips.

Standing position is returned to on the command: **Feet together and arms downward, STRETCH!**

The named foot is shifted back to the other foot and at the same time the arms are stretched down to the sides.

Common faults: (See par. 16.)

36. Yard, forward walk standing: Heel raising.

The starting position is taken on the command: **Left (right) foot forward and arms sideways, RAISE!**

The named foot is placed forward as in paragraph 12 and at the same time the arms are raised sideways as in paragraph 3.

The heel raising is carried out as in paragraph 16.

Standing position is returned to on the command: **Feet together and arms downward, SINK!**

The named foot is shifted back and the arms lowered to the sides.

Common faults: (See pars. 12 and 16.)

37. **Wing standing: Heel raising and knee bending.**

Starting position is taken on the command: **Hip**

FIRM! (Par. 2.)

Then the exercise is carried out by numbers: "One" the heels are raised, at "Two" the knees are bent, at "Three" the knees are stretched, at "Four" the heels are lowered, and so on.

Standing position is returned to on the command: **Arms downward, STRETCH!**

Common faults. (See par. 17.)

38. **Yard standing: Heel raising and knee bending sitting.**

Starting position is taken on the command: **Arms sideways, RAISE!** (See par. 3.)

The exercise is carried out as in the preceding paragraph, but with the difference that the knees are bent to sitting, as in paragraph 18, on the commands: **Heels, RAISE! Knees, STRETCH! Knees to sitting, BEND! Heels, SINK!**

Standing position is returned to on the command: **Arms downward, SINK!** See par. 3.)

Common faults. (See pars. 3 and 18.)

39. **Wing standing: Lunging outward.**

Starting position is taken on the command: **Hip FIRM!** (See par. 2.)

The exercise is carried out on the commands: **Left (right) foot outward, LUNGE!** (See par. 13.) **Feet together, PLACE!**

Then the exercise is carried out by numbers.

Standing position is returned to on the command: **Arms downward, STRETCH!**

Common faults. (See pars. 2 and 13.)

40. **Bend standing: Lunging forward.**

Starting position is taken on the command: **Arms BEND!** (See par. 5.)

The exercise is carried out on the commands: **Left (right) foot forward, LUNGE!** (See par. 14.) **Feet together, PLACE!**

Standing position is returned to on the command: **Arms downward, STRETCH!**

Common faults. (See pars. 5 and 14.)

41. **Wing standing: Advance by lunging forward.**

Starting position is taken on the command: **Hips, FIRM!** (See par. 2.)

The exercise is carried out on the commands:

Advancing forward by numbers, ONE! TWO! THREE! FOUR!

At count "One," the left foot is shifted forward, as in paragraph 14; at "Two," the right foot is shifted forward to the left foot; at "Three," the right foot is shifted forward; and at "Four," the left foot is carried forward to the right, and so on.

Then the class is faced about and the exercise repeated.

Standing position is returned to on the command: **Arms downward, STRETCH!**

Common faults: The class not working in unison and not keeping the proper dress in ranks while advancing forward.

EXERCISES OF THE ARMS CARRIED OUT IN THE SIMPLE STARTING POSITIONS

42. **Standing: Arm stretching sideways.**

The exercise is carried out on the command: **Arms sideways, STRETCH!**

(Two motions:)

1. The arms are bent upward to the bend position as in paragraph 5.

2. The arms are stretched sideways to the horizontal position, with the palms of the hands turned downward.

Standing position is returned to on the command: **Arms downward, STRETCH!**

(Two motions:)

1. The arms are carried in to the bend position with a snap.

2. The arms are stretched downward with force to the sides.

NOTE.—The movement of all arm stretchings is continuous with very little pause at the bend position.

Common faults:

The arms not fully stretched and the palms not turned downward.

Not enough snap and effort in the bending movement.

43. **Standing: Arm stretching upward.**

The exercise is carried out on the command: **Arms upward, STRETCH!**

(Two motions:)

1. The arms are bent upward, as in preceding paragraph.

2. The arms are stretched upward to the vertical position above the head, with palms turned inward and arms shoulder width apart.

Standing position is returned to on the command: **Arms downward, STRETCH!**

(Two motions:)

1. The arms are carried in to the bend position with a snap.

2. The arms are stretched downward with force to the sides.

NOTE.—After arm stretchings are carried out by command they are executed by numbers, one count for each movement.

Common faults:

Arms not stretched upward with force and held shoulder width apart.

Palms of hands not turned inward.

44. Standing: Arm stretching forward.

The exercise is carried out on the command: **Arms forward, STRETCH!**

(Two motions:)

1. The arms are bent upward, as in paragraph 5.

2. The arms are stretched forward to the horizontal position in front of the body; palms of hands turned inward and arms shoulder width apart.

Standing position is returned to on the command: **Arms downward, STRETCH!**

The arms are stretched downward in two motions, as in preceding paragraph.

Common faults. (See preceding paragraph.)

45. Standing: Arm stretching backward.

The exercise is carried out on the command: **Arms backward, STRETCH!**

(Two motions:)

1. The arms are bent upward, as in paragraph 5.

2. The arms are stretched downward and backward with force; the hands are held shoulder width apart and the palms are turned inward.

The position arising from the arm stretching backward is called drag standing.

Standing position is returned to on the command: **Arms downward, STRETCH!**

The arms are stretched downward in two motions, as in preceding paragraph.

Common faults:

The head carried forward as the arms are stretched backward.

The arms not carried back far enough.

46. Forward bend standing: Arm striking sideways.

Starting position is taken on the command: **Arms forward, BEND!** (See par. 6.)

The exercise is carried out on the commands: **Arms sideways, STRIKE!**

The arms are stretched sideways to the yard position.

The upper arms are held in a firm position.

Arms forward, BEND!

The arms are carried in to the first position.

Then the arm striking is carried out by numbers.

Standing position is returned to on the command: **Arms downward, STRETCH!**

Common faults: The upper arms not held firm during the arm striking.

47. Bend Standing: Arm stretching in various directions. Starting position is taken on the command: **Arms, BEND!**

The exercise is carried out on the commands:

Arms sideways, STRETCH! Arms, BEND! (See par. 42.)

Arms upward, STRETCH! Arms, BEND! (See par. 43.)

Arms forward, STRETCH! Arms, BEND! (See par. 44.)

Arms backward, STRETCH! Arms, BEND! (See par. 45.)

Standing position is returned to on the command: **Arms downward, STRETCH!**

Common faults: (See pars. 42, 43, 44, and 45.)

48. Reach standing: Arm swinging upward and forward. Starting position is taken on the command: **Arms forward, RAISE!**

The exercise is carried out on the commands: **Arms upward, SWING!**

The arms are swung upward to the stretch position.
Arms forward, SWING!

The arms are swung forward to the reach position.
Standing position is returned to on the command:
Arms downward, SINK!

NOTE.—All arm swingings are carried out by numbers after being executed by command.

49. **Stretch standing: Arm swinging forward and upward.**

Starting position is taken on the command: **Arms forward and upward, RAISE!** (See par. 7.)

The exercise is carried out on the commands: **Arms forward, SWING! Arms upward, SWING!**

As in the preceding paragraph, but with the difference that the arms are swung first to the reach and then to the stretch position.

Standing position is returned to on the command:
Arms forward and downward, SINK!

50. **Reach standing: Arm swinging sideways.**

Starting position is taken on the command: **Arms forward, RAISE!**

The exercise is carried out on the commands: **Arms sideways, SWING!**

The arms are swung sideways to the yard position, palms turned downward.

Arms forward, SWING!

The arms are swung forward to the reach position, palms turned inward.

Standing position is returned to on the command:
Arms downward, SINK!

Common faults: The head carried forward during the arm swinging sideways.

51. Yard standing: Arm swinging forward.

Starting position is taken on the command: **Arms sideways, RAISE!**

The exercise is carried out on the commands: **Arms forward, SWING! Arms sideways, SWING!**

As in the preceding paragraph, but with the difference that the arms are first swung to the reach and then to the yard position.

Standing position is returned on the command: **Arms downward, SINK!**

Common faults. (See preceding paragraph.)

52. Standing: Arm swinging forward and upward.

The exercise is carried out on the commands: **Arms forward and upward, SWING!**

The arms are swung forward and upward in front of the body to the stretch position.

Arms forward and downward, SWING!

The arms are swung forward and downward in the reversed manner to the standing position.

Common faults:

The arms not held straight and shoulder wide apart.

The arms allowed to swing beyond the thighs in the downward swing.

53. Standing: Arm swinging sideways and upward.

The exercise is carried out on the commands: **Arms sideways and upward, SWING! Arms sideways and downward, SWING!**

As in preceding paragraph, but with the difference that the arms are swung sideways and upward and then sideways and downward.

Common faults: Besides those in preceding paragraph, the arms allowed to slap the thighs in the downward swing.

54. **Standing: Arm circling with a swing.**

The exercise is carried out on the commands: **Arms forward and upward, SWING! Arms sideways and downward, SWING!**

Common faults. (See par. 7.)

55. **Half stretch standing: Arm changing with a swing.**

Starting position is taken on the command: **Left (right) arm forward and upward, RAISE!** (See par. 7.)

The exercise is carried out by numbers on the command: **Arm changing with a swing by numbers, ONE! TWO!**

At "One," the arm above the head is swung forward and downward and at the same time the other arm is swung forward and upward.

At "Two," the arms are changed in the reversed manner, and so on.

Standing position is returned to on the command: **Left (right) arm forward and downward, SINK!**

Common faults:

The arms not held straight during the swinging.

The head carried forward and the shoulders not held firm.

56. **Stretch standing: Arm parting.**

The starting position is taken on the command: **Arms forward and upward, RAISE!** (Par. 7.)

The exercise is carried out on the command: **Arm parting by numbers, ONE!** The arms are quickly parted and lowered to the yard (A) position, with palms turned upward.

TWO! They are quickly swung upward to the first position, and so on.

Standing position is returned to on the command: **Arms forward and downward, SINK!**

Common faults: The arms not held straight and the head carried forward.

57. Yard (A) standing: Arm parting.

The starting position is taken on the command
Arms sideways, **RAISE!** (Par. 3.)

Hands upward, **TURN!**

With the arms held straight the hands are quickly turned upward to the yard (A) position.

The arm parting is then carried out by numbers as in the preceding paragraph, but with the difference that the arms are raised upward and then sideways.

Standing position is returned to on the command
Hands downward, **TURN!** Arms downward, **SINK!**

Common faults: (See preceding paragraph).

EXERCISES OF THE NECK CARRIED OUT IN THE SIMPLE STARTING POSITIONS

58. Wing standing: Head bending backward (forward)

Starting position is taken on the command: Hip
FIRM!

The exercise is carried out on the commands: Head
backward (forward), **BEND!**

The head is bent backward (forward) as far as possible; the chin is drawn in and the shoulders held firm.

Head upward, **STRETCH!**

The head is raised upward to the standing position.

Standing position is returned to on the command
Arms downward, **STRETCH!**

Common faults: Chin not drawn in and the shoulders not firm.

NOTE.—Head bending can also be carried out in the backward, or forward bend standing positions.

59. Wing standing: Head bending sideways.

Starting position is taken on the command: Hip
FIRM!

The exercise is carried out on the commands: Head to
the left (right), **BEND!**

The head is slowly bent to the named side as far as possible, the shoulders are held firm, and the chin is drawn in.

Head upward, **STRETCH!**

The head is slowly raised to the starting position.

Standing position is returned to on the command:
Arms downward, **STRETCH!**

NOTE.—Head bending sideways can also be carried out in the bend, yard, or forward bend standing positions.

60. Wing standing: Head twisting.

Starting position is taken on the command: **Hips, FIRM!**

The exercise is carried out on the commands: **Head to the left (right), TWIST!**

The head is twisted to the named side as far as possible, keeping the head erect and the chin drawn in.

Head forward, **TWIST!**

The head is slowly twisted forward to the standing position.

Standing position is returned to on the command:
Arms downward, **STRETCH!**

NOTE.—Head twisting can also be carried out in the wing, bend, yard, and spring sitting positions. All head bendings and twistings should be carried out by numbers after being executed by command.

EXERCISES OF THE TRUNK IN THE SIMPLE STARTING POSITIONS

61. Rest standing: Trunk bending backward.

Starting position is taken on the command: **Neck, REST!**

The exercise is carried out on the commands: **Trunk backward, BEND! Trunk upward, STRETCH!** (See par. 20.)

Standing position is returned to on the command **Arms downward, STRETCH!**

NOTE.—Trunk bending backward should always be followed by trunk bending forward.

Trunk bending backward can also be carried out in the wing, bend, yard, or stretch standing positions.

62. Wing standing: Trunk bending forward.

Starting position is taken on the command: **Hips FIRM!**

The exercise is carried out on the commands: Trunk forward, **BEND!** Trunk upward, **STRETCH!** (See par. 19.)

Standing position is returned to on command: **Arms downward, STRETCH!**

Trunk bending forward can also be carried out in the bend, yard, stretch, or forward bend standing positions.

Common faults: (See par. 19.)

63. Yard standing: Trunk bending sideways.

Starting position is taken on the command: **Arms sideways, RAISE!** (Par. 3.)

The exercise is carried out on the commands: Trunk to the left (right), **BEND!** (See par. 22.)

Trunk upward, **STRETCH!**

Standing position is returned to on the command **Arms downward, SINK!**

NOTE.—Trunk bending sideways can also be carried out in the wing, rest, bend, stretch, or forward bend standing positions.

Common faults: (See par. 22.)

64. Rest standing: Trunk twisting.

Starting position is taken on the command: **Neck REST!** (Par. 8.)

The exercise is carried out on the commands: **Trunk to the left (right), TWIST!** (Par. 21.)

Trunk forward, TWIST!

Standing position is returned to on the command: **Arms downward, STRETCH!**

NOTE.—Trunk twisting can also be carried out in the bend, yard, wing, forward bend, or stretch standing positions.

Common faults: (See par. 21.)

PART SIX
LANDING FORCE

LANDING FORCE

Each ship, division, and fleet has a permanently organized landing force, composed of infantry, artillery, machine gun, and other units as are provided. The service required of the landing force may vary from police duty in a country where a state of anarchy or revolution exists to the hardest kind of offensive operations against an enemy on shore.

The station of every man for a landing force is given in the landing force bill posted on the crew's bulletin board. Any man uncertain as to his duties should consult his division officer. The full details of a landing force are given in the Landing Force Manual.

CHAPTER 55

EQUIPMENT CARRIED BY EACH MAN: HAVERSACK, PACK, RATIONS; ASSEMBLING THE EQUIPMENT

Lightly equipped.—When lightly equipped, men will carry filled canteens and cartridge belt and will wear leggins. The pack carrier with haversack may be prescribed if circumstances require it.

Fully equipped.—When fully equipped each man will carry (see Figures 265 to 269):

1. Haversack (packed).
2. Pack in pack carrier.
3. Cartridge belt.
4. Canteen cover.
5. Canteen (filled).
6. Cup (included with canteen).
7. First-aid pouch.
8. Bayonet scabbard.
9. Rubber blanket.

Leggings will be worn.

NOTE.—Any of these articles when not required by the special nature of service, may be omitted by direction of the commander in chief or senior officer present. Pioneers and others when specially ordered, carry the following in addition to the above: Pick mattock; pick mattock carrier; hand ax; hand ax carrier; shovel; shovel carrier.



FIG. 265.— Fully equipped.
(Front)

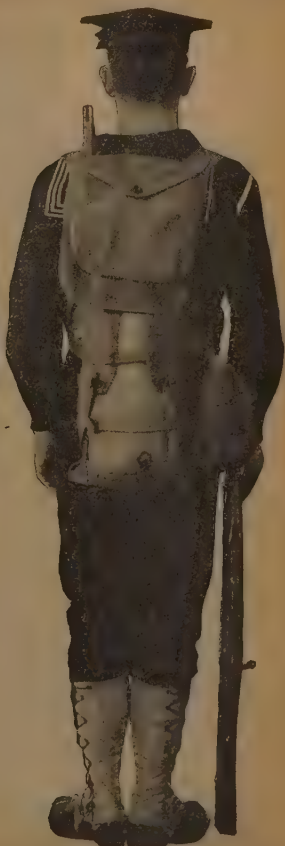


FIG. 266.—Fully equipped.

FIG. 267.—Fully equipped. (Without intercombinator.)



FIG. 268.—Fully equipped (Poncho carried in carrier binding strap)



FIG. 269.—Partially equipped (Poncho discarded)



FIG. 270. Poncho and cap.

The haversack contains the following:

1. Meat can.
2. Knife.
3. Fork.
4. Spoon.
5. Bacon can.
6. Condiment can.
7. Towel.
8. Tobacco.
9. Toilet articles, as comb, soap, toothbrush, and tooth paste.
10. Black and white thread and needles.

The pack contains the following:

1. One suit of blue or white uniform.
2. One suit of underclothes.
3. One white hat and one watch cap.
4. One pair of shoes.
5. Two pairs of socks.

Rations for two days' service are carried in the haversack and usually consist of the following:

1. Four cartons of hard bread (20 ounces).
2. Two pounds of bacon.
3. Coffee, 4 ounces; sugar, 8 ounces; salt, 1 ounce.

ASSEMBLING THE EQUIPMENT

Pack carrier and haversack.—Spread the haversack on the ground, inner side down, outer flap to the front. Place the buttonholed edge of the pack carrier on the buttonholed edge of the haversack, lettered side of the carrier up, buttonholes of the carrier resting on the corresponding ones of the haversack. Lace the carrier to the haversack by passing the ends of the coupling strap through the corresponding buttonholes of the

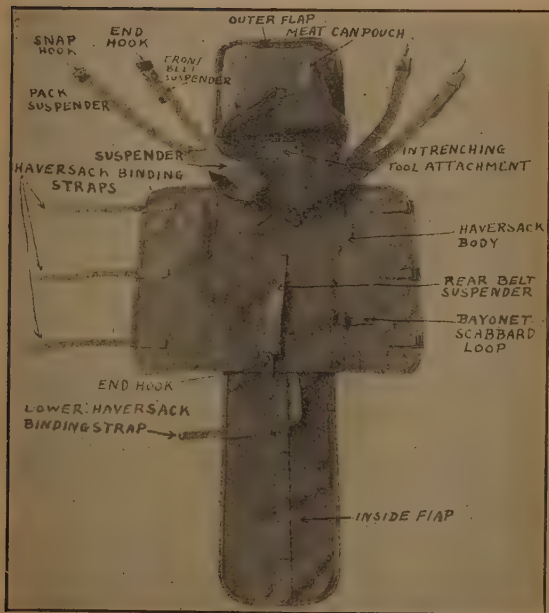


FIG. 271.—Haversack

carrier and haversack nearest the center of the carrier passing the ends up through the next buttonholes and continuing to the right and left, to the sides, until they are linked together. (See figs. 271, 272, and 273.)

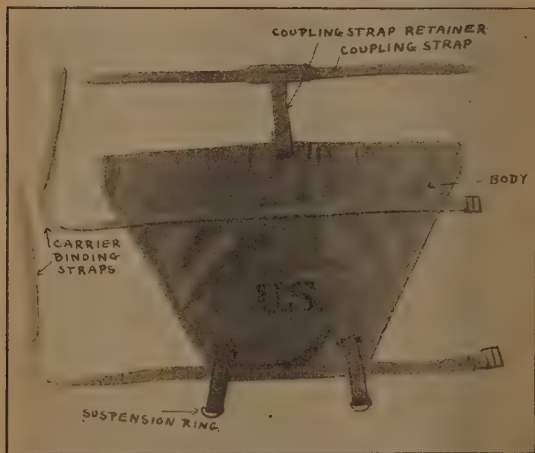


FIG. 272.—Pack carrier

Cartridge belt and haversack.—With the pack carrier and haversack assembled, spread on the ground, inside down, belt adjusted to man. Place the cartridge belt, pockets down, tops to the front, along the junction of the haversack and carrier. Insert the end hook of rear belt suspender in the center eyelet of the adjusting strap, the end of the hook outside of the belt. Insert

end hooks of front belt suspenders in the eyelets between the second and third pockets from the male and female fasteners. (See figs. 274 and 288.)

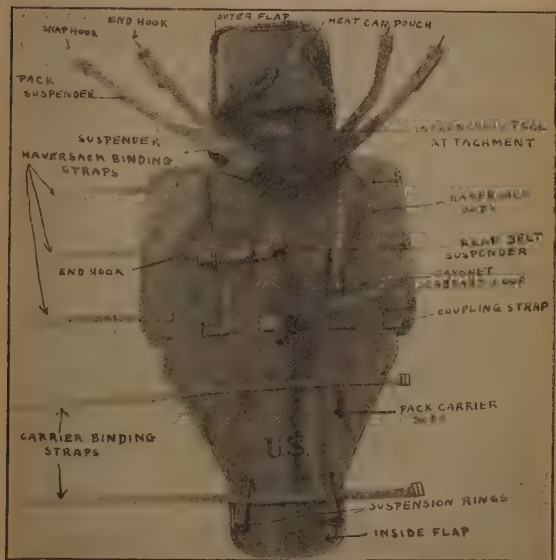


FIG. 273.—Haversack and pack carrier assembled

Canteen cover to cartridge belt.—Disengage the canteen and cup from the cover, the cover being flexible and easier to attach. Attach the canteen cover to the belt under the rear pocket of the right pocket section

of the belt by inserting one hook of the double-hook attachment in the eyelet from the inside of the belt. Pinch the base of the pocket, bring eyelets close together; then insert the other hook in the same



FIG. 274.—Assembling cartridge belt

manner. Insert the canteen in the cup (assembled). place them in the cover, and secure the flaps. (See figs. 269 and 274.)

First-aid pouch to cartridge belt.—Attach the pouch under the second pocket of the right pocket section of the belt in the same manner as the canteen cover.

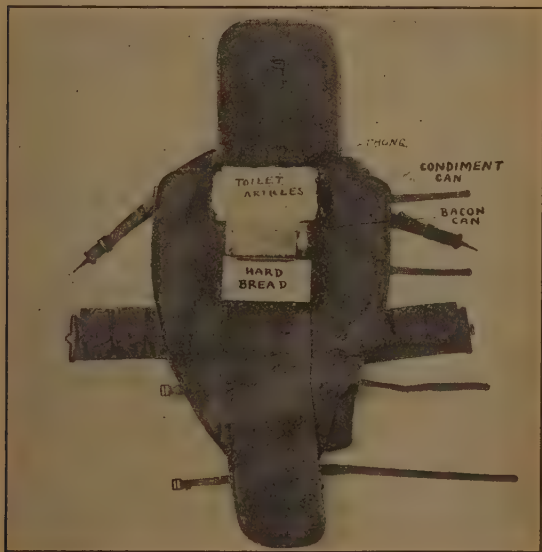


FIG. 275.—Assembling rations

Place the first-aid packet in the pouch and secure the cover. (See figs. 265 and 288.)

Assembling the full equipment with rations.—Place the assembling equipment on the ground, suspender side of haversack down, pockets of cartridge belt up, haver-

sack spread out, inner flap and pack carrier extended their full length to the rear. (See fig. 275.)

An emergency ration for two days' service may be issued to each man and carried in the haversack, consisting of 4 cartons of hard bread (20 ounces) in the center of the haversack body, the lower ones on a line of attachment of the inside flap. Lay the remaining ones at the head, the bacon can and the condiment can at the head of the bread, bacon can at the bottom

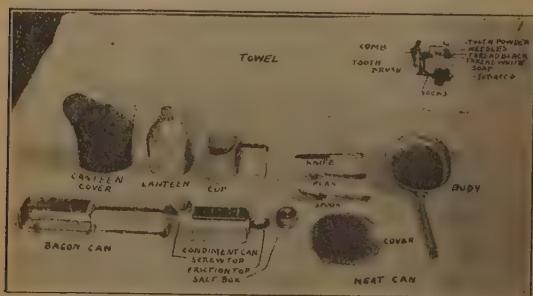


FIG. 276.—Details of equipment

containing 2 pounds, condiment can on top (coffee, 8 ounces; sugar, 8 ounces; three days' rations of salt in the cover).

The socks and toilet articles (fig. 276) are rolled into towels on the outside, into a neat roll of the same approximate dimensions as a carton of bread, and are placed in front of the cans, at the head of the haversack.

The inner flap of the haversack is folded over these articles, the end of the flap being turned in so that the

flap tends to hold the towel and rations firmly. The sides of the haversack are folded over the sides of the rows; the upper binding straps are passed through the loops on the outside of the inside flap, each strap



FIG. 277.—Assembling packed haversack

through the loop opposite the point of its attachment to the haversack body, and fastened to the tongueless bar buckles on the opposite side. The straps are then pulled tight to make the fastening secure. The outer flap is folded over and fastened by means of the lower

haversack binding strap and the tongueless bar buckle on the inside of the outer flap. The strap is pulled tight, drawing the outer flap singly over the filled haversack. (Fig. 277.)

Assembling clothing in blanket without poncho.—The blanket will be laid out its full length, folding the blanket approximately 158 inches, the width 59 inches

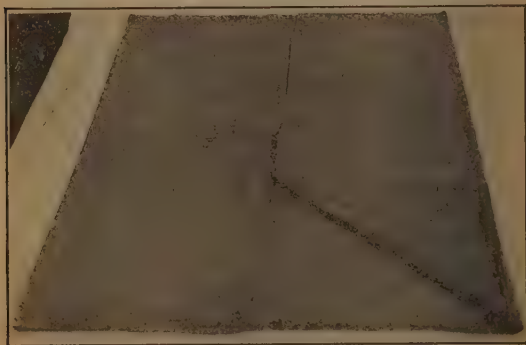


FIG. 278.—Blanket folded to receive equipment

When the blanket is folded, its length is 79 inches, or half the total length. The blanket weighs 3 pounds. The left-hand part of the blanket forms a place for the clothing; the right-hand forms the lock. On the left-hand part of the blanket, about 1 foot from the edge, lay a blue or a white jumper and a pair of blue or white trousers, folded separately, single fold, place side by side, forming the first layer of clothes. (Fig. 279.) On top of the first layer of clothes, place on

undershirt and one pair of drawers, similarly folded, to form the second layer (extra suit of underclothes may be folded, if necessary). Place a white hat and a watch cap as most convenient, forming the outer layer. (Fig. 280.) In the place toward the edge of the blanket, near the body, place a pair of shoes, soles upward, and toes at the center, heels outward. Now fold the lower or right-hand part of the blanket over the equipment, locking the clothing. (Fig. 281.) Take the farther edge of the blanket, away from the body, and fold it so that the edge will be in a line with the shoes. This forms the second fold and affords a means for rolling. Grasp the blanket and shoes firmly and roll tightly and compactly. This will form a pack approximately 8 inches in diameter and 29 inches in length.

Assembling clothing in blanket with poncho or shelter half.—Spread the poncho on the ground and fold once on its length (fig. 283), with the slit and flap at the top and center, the flap laid back. Take the edge of the poncho and fold it again (fig. 284), forming an approximate square to receive the blanket pack, which is laid in the center of the poncho (fig. 285), fold the edges of the poncho snugly over the blanket pack, and, beginning on the side that bears the shoes, roll tightly and compactly. This also forms the pack, but it is advisable to carry the poncho in the upper carrier binding strap (fig. 268), in case of a sudden change of weather, thus making it unnecessary to disturb the pack when removing poncho. The shelter half of the tent may be used in the same manner as the poncho in assembling the pack. It may be used to protect the equipment if the poncho is carried in the upper carrier binding strap.

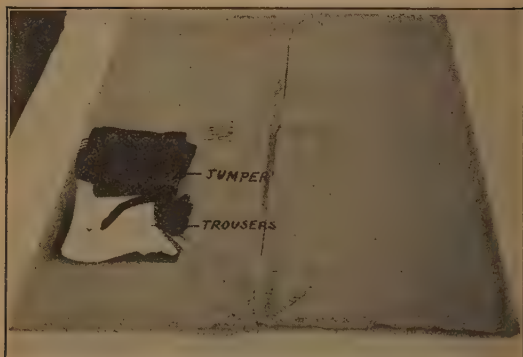


FIG. 279.—First layer of clothes

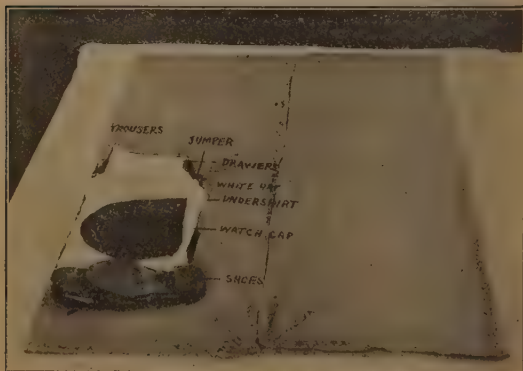


FIG. 280.—Second and outer layer of clothes

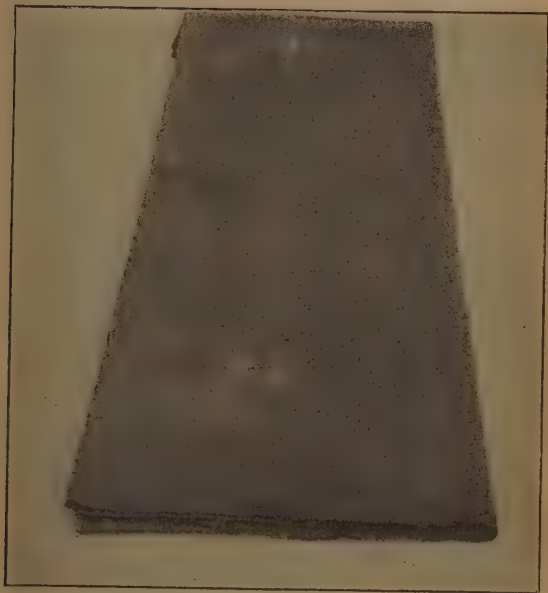


FIG. 281.—Equipment locked in blanket. (Folded once.)



FIG. 282.—Equipment locked in blanket. (Folded twice)

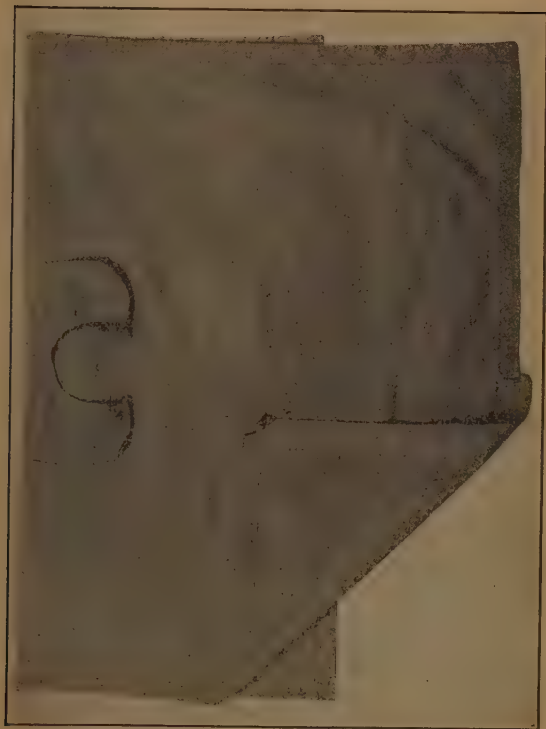


FIG. 283.—Poncho folded once, to receive blanket pack

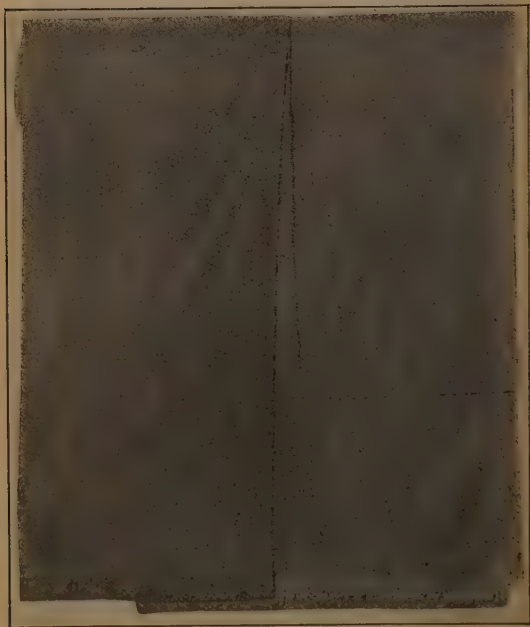


FIG. 284.—Poncho folded twice, forming a square to receive blanket pack

Assembling pack to pack carrier.—Place the pack in the pack carrier and grasp the lower suspension at the base of the pack carrier, one in each hand; place the right knee against the bottom of the roll; pull the carrier down and force the pack up close against the bottom of the packed haversack; without removing

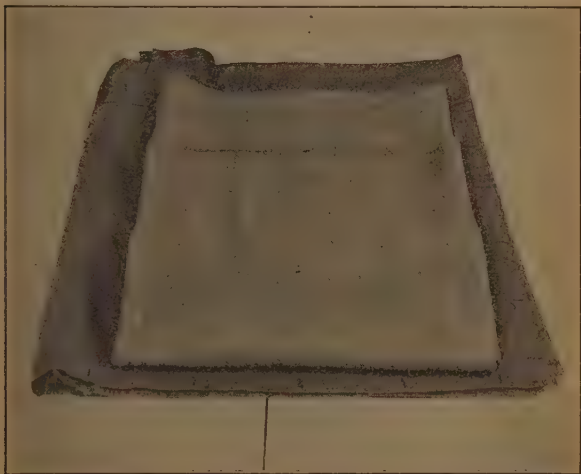


FIG. 285.—Blanket pack laid on poncho for rolling

the knee, pass the lower carrier binding strap over the pack and secure it by means of the opposite buckle; in a similar manner secure the bottom haversack binding strap and then the upper carrier binding strap. Engage the snap hook on the pack suspenders in the lower suspension rings. (Fig. 286.) The equipment

is now assembled and packed ready to be further adjusted to the man.

To remove pack without removing the remainder of the equipment.—Unsnap the pack suspender from the suspension rings and snap them to the eyelets on top of the belt and in rear of the rear pockets of the right and left



FIG. 286.—Full equipment. (Without intrenching tools)

pocket sections. Support the bottom of the pack with the left hand and with the right hand grasp the coupling strap at its middle and withdraw first one end, then the other; press down gently on the pack with both hands and remove it. Adjust the pack suspenders to suit. (Fig. 269.)

Assembling haversack without the pack.—With the pack carrier detached from the haversack, place the rest of the equipment on the ground as heretofore described; place the four cartons of hard bread, the bacon can, the condiment can, and the towel containing the toilet articles in one row in the middle of the haversack, body horizontal, the toilet articles on top, the bacon can on the bottom, the row extending from top to bottom of the haversack. Fold the inside flap up and over; pass the three haversack binding straps through the loops on the inside flap and secure by means of the tongueless bar buckles on the opposite side of the haversack. Pass the lower haversack binding strap through the small horizontal buttonholes; fold the outer flap of the haversack over the whole and secure by means of the tongueless bar buckle on its under side and the lower haversack binding strap. Pass the haversack suspension rings, which are secured to the outside of the inside flap, through the contiguous buttonholes in the lower edge of the haversack and engage the snap hooks on the ends of the pack suspenders to the suspension rings as above mentioned. (Fig. 287.)

Assembling bayonet scabbard to haversack.—Disengage the bayonet from the scabbard and attach the scabbard by passing its lower end through the loop provided on the left side of the haversack body, then engage the double-hook attachment in the eyelets on the outer flap on the haversack, inserting the hooks from the inside. Place the bayonet in the scabbard eye to the front, edge of the blade to the rear. (Figs. 286 and 287.)

Assembling shovel carrier to haversack.—Fold the outer flap of the haversack over so that the meat-can pouch is uppermost and engage the double-hook attachment



Fig. 287.—Fully equipped. (Without the pack)

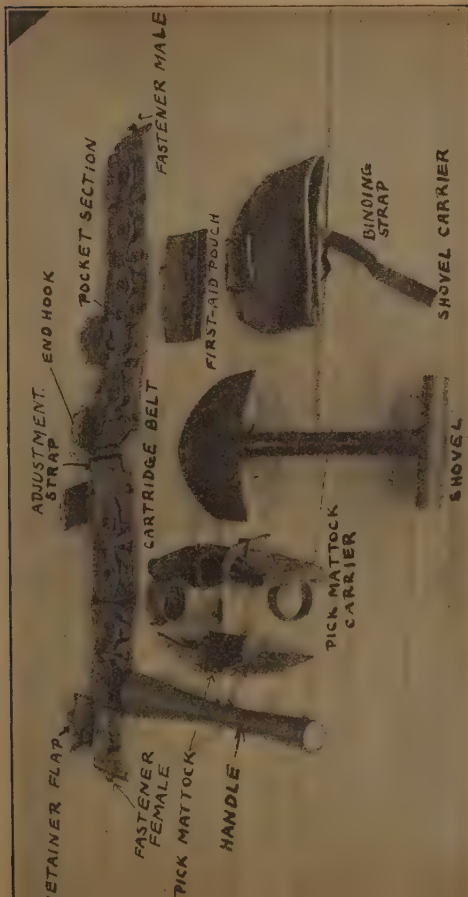


FIG. 288.—Cartridge belt and intrenching tools

in the eyelets in the intrenching-tool attachment, inserting the hooks from the under side. Place the intrenching tool in the carrier and secure it by its binding strap. Place the meat can in the meat-can pouch (Figs. 266 and 288.)

Assembling pick-mattock carrier to cartridge belt.—Disengage the pick mattock and handle from the carrier. Attach the pick-mattock carrier to the belt under the rear pocket of the left section of the belt by inserting one hook of the double-hook attachment in the eyelet from the inside of the belt; pinch the base of the pocket, bringing the eyelets close together, then insert the hook in the same manner. With lower part of the carrier body released by its strap, insert the point of the pick mattock into the top handle loop which forms a pocket for the point, and secure the blade by folding the lower body over, and fasten in position by a strap which passes through a loop to the body through a tongueless bar buckle sewed to the other end of the strap. Insert the pick-mattock handle through the top handle loop by the double hook and the lower handle loop by the front body.

Assembling ax carrier to cartridge belt.—Disengage the ax carrier. Assemble the ax carrier under the second pocket of the left pocket section of the belt in the same manner as the pick-mattock carrier.

NOTE.—The methods given with the help of the plates will be clearer if all the equipment is made available for practical work in connection with a study of these methods.

CHAPTER 56

EXTENDED ORDER

Extended order is extensively used by the infantry of a landing force, especially during open warfare. It is essential therefore that every man understand it thoroughly so as to render efficient service and at the same time to safeguard himself.

TO FOLLOW THE SQUAD LEADER

Being assembled or deployed, to march the squad without unnecessary commands, the petty officer places himself in front of it and commands: **FOLLOW ME.**

If in line or skirmish line, No. 2 of the front rank follows in the trace of the petty officer at about 3 paces; the other men conform to the movements of No. 2, guiding on him and maintaining their relative positions.

If in column, the head of the column follows the squad leader.

TO DEPLOY AS SKIRMISHERS

Being in any formation, assembled: 1. **As skirmishers,**
2. **MARCH.**

The squad leader places himself in front of the squad, if not already there. Moving at a run, the men place themselves abreast of the petty officer at 5-pace intervals, Nos. 1 and 2 on his right, Nos. 3 and 4 on his left, rear-rank men on the right of their file leaders, extra

men on the left of No. 4; all then conform to the squad leader's gait.

When the squad is acting alone, skirmish line is similarly formed on No. 2 of the front rank, who stands fast or continues the march, as the case may be; the squad leader places himself in front of the squad when advancing and in rear when halted.

When deployed as skirmishers, the men march at ease, pieces at the trail unless otherwise ordered.

The squad leader is the guide when in line; otherwise No. 2 front rank is the guide.

If marching to the rear, skirmishers resume the march to the front by command: 1. Forward, 2. MARCH.

TO INCREASE OR DIMINISH INTERVALS

If assembled, and it is desired to deploy at greater than the normal interval; or if deployed, and it is desired to increase or decrease the interval; 1. As skirmishers (so many) paces, 2. MARCH.

Intervals are taken at the indicated number of paces. If already deployed, the men move by the flank toward or away from the guide.

THE ASSEMBLY

Being deployed: 1. Assemble, 2. MARCH.

The men move toward the squad leader in double time and form in their proper places.

If the squad leader continues to advance, the squad follows him at 3 paces.

The assembly while marching to the rear is not executed.

KNEELING AND LYING

To kneel or lie down.—(a) To kneel: **KNEEL**. Assume the kneeling firing position, except the left forearm is across the left thigh; rifle remains in position of order, right hand grasping it above the lower band.

(b) Being at a halt, quick time, double time, or running; to lie down the command is: **DOWN**.

(1) Advance the left foot, turning it across the front of the body.

(2) Drop forward on the outside of the left knee and at the same time extend the rifle, grasped in both hands and held vertically, so that the butt strikes the ground at full arm's length directly in front of the left knee.

(3) Pivoting on the left knee and the butt of the rifle, roll forward into the firing position, with the rifle at the shoulder, or into the prone position, with the rifle on the ground to the front.

(4) To kneel or lie down with the automatic rifle is executed in the same manner as with the service rifle.

(c) When without the rifle, advance the left foot as above. Extend the left arm over the head and roll forward on to the left knee, the left hip, and the left shoulder into the prone position. Care should be taken that the hands do not get under the body. In the prone position, the body is flat on the stomach, the left side of the face on the ground, legs extended and apart with heels down, arms to the front and flat on the ground. The piece, if carried, is held to the front grasped in the right hand.

(d) In *lying down*, those required to fire or simulate firing drop to the firing position, others to the prone position.

(e) If kneeling or lying down, to stand up the command is: **RISE**.

If kneeling, stand up, face to the front, on the ground marked by the left heel.

If lying down, raise the body on both knees; stand up, face to the front, on the ground marked by the knees.

(f) If lying down, to kneel the command is: **KNEEL**. Raise the body on both knees; take the position of kneel.

The prone position is the usual position of the skirmisher when in skirmish line and when not advancing. When firing, the prone position is used to utilize cover. The sitting or kneeling position may be used in firing when necessary to obtain a better field of fire.

LOADINGS AND FIRINGS

The commands for loading and firing are the same whether standing, kneeling, or lying down. The firings are always executed at a halt.

When kneeling or lying down in double rank, the rear rank does not load, aim, or fire.

Loadings are executed in line and skirmish line only.

Pieces having been ordered loaded are kept loaded without command until the command unload, or inspection arms, fresh clips being inserted when the magazine is exhausted.

To load.—Being in line or skirmish line at a halt
1. With dummy (blank or ball) cartridges, 2. **LOAD**. At the command load each front-rank rifleman or skirmisher faces half right and carries the right foot about 12 inches to the right to such position as will

insure the greatest firmness and steadiness of the body; raises or lowers the rifle and drops it into the left hand at the balance, left thumb extended along the stock, muzzle at the height of the breast, and if armed with the model 1903 rifle, turns the cut-off up. With the right hand he turns up the bolt and draws it back; takes a loaded clip and inserts the end in the clip slots; places his thumb on the powder space of the top cartridge, the fingers extending around the rifle and tips resting on the magazine floor plate; forces the cartridges into the magazine by pressing down with the thumb; removes the clip; thrusts the bolt home, turning down the handle; turns the safety lock to the "safe" and carries the hand to the small of the stock. When in double rank each rear-rank rifleman moves to the right front, takes a similar position opposite the interval to the right of his front-rank man, muzzle of his piece extending beyond the front rank, and loads. Automatic-rifle men do not execute the loadings or firings in close order.

To unload.—Being in line or skirmish line: **UNLOAD.** Take the position of load, turn the safety lock (model 1903 rifle) up (if armed with the model 1917 rifle turn the safety lock to the front) and move the bolt alternately backward and forward until all the cartridges are ejected. After the last cartridge is ejected, the chamber is closed by first thrusting the bolt forward slightly to free it from the stud holding it in place when the chamber is opened, pressing the follower down and back to engage it under the bolt, and then thrusting the bolt home. The trigger then is pulled, the cartridges are picked up, cleaned, and returned to the belt, and the rifle is brought to the order.

TO FIRE AT WILL

FIRE AT WILL.

Each man, independently of the others, comes to the ready, aims carefully and deliberately at the aiming point or target, fires, loads, and continues the firing until ordered to suspend or cease firing.

TO SUSPEND FIRING

The squad leader blows a long blast of the whistle and repeats same, if necessary, or commands: **SUSPEND FIRING.**

Firing stops; pieces are held, loaded and locked, in a position of readiness for instant resumption of firing, rear sights unchanged. The men continue to observe the target or aiming point, or the place at which the target disappeared, or at which it is expected to reappear.

This whistle signal may be used as a preliminary to cease firing.

TO CEASE FIRING

CEASE FIRING.

Firing stops; pieces not already there are brought to the position of load; those not loaded are loaded, sights are laid, pieces are locked and brought to the order.

DEPLOYMENTS

Being in column of squads, twos, or files, or section columns, to deploy as skirmishers:

1. As skirmishers, 2. **MARCH.**

The squad leader of the leading squad moves in quick time straight to the front or in the direction indicated by the platoon leader. The leading squad de-

plays abreast of its squad leader. The center and rear squads of the leading section deploy abreast of the leading squad, the center squad on its right, the rear squad on its left, men running individually toward their places on the line as soon as disengaged from column. If the leading section consists of only two squads, the rear squad deploys on the right of the leading squad.

The rear section deploys abreast of its leading squad and parallel to the line of the leading section as described for that section, the leading squad deploying in place. Unless otherwise directed by the platoon leader, the rear section gains a distance of approximately 50 paces from the leading section; if the platoon advances, the rear section halts and allows the leading section to gain the distance of approximately 50 paces and then takes up the advance, modifying its distance as required by considerations of cover.

The platoon petty officer, section leaders and guides, and runners take their prescribed posts.

Squads may be deployed on one flank only of the leading squad of each section by the command: 1. **As skirmishers, right (left)**, 2. **MARCH**. Executed as above described, except that in each section the squads in rear of the leading squad of the section deploy on the right and abreast of the leading squad of the section.

One section only may be deployed by the command: 1. **(Such) Section**, 2. **As skirmishers right (left)**, 3. **MARCH**. Executed by the designated section as above described for the leading section.

Being in column of squads, twos, or files, to deploy in line of squad columns: 1. **Squad columns**, 2. **MARCH**, or 1. **Squad columns, right (left)**, 2. **MARCH**.

Executed as prescribed above except that each squad if not already in column of files, executes left by file and follows its leader; leaders of squads in rear of the leading squad of each section conduct their squads in double time to their places abreast of the leading squad of the section.

The formation in line of squad columns may be combined with line of skirmishers by appropriate commands; example: 1. First Section, as skirmishers, 2. Second Section, squad columns, 3. **MARCH**.

Being in skirmish line, to form line of squad columns: 1. Squad columns, 2. **MARCH**.

Each squad leader moves to the front; the members of each squad oblique at a run toward their squad leader and follow him in single file at easy marching distances.

Being in line of squad columns, to form line of skirmishers: 1. As skirmishers, 2. **MARCH**.

Each squad deploys, the skirmishers forming in the same relative order as in deployment from close-order formation.

Being in line of skirmishers or squad columns, to form section columns: 1. Section columns, 2. **MARCH**.

Section leaders move forward in front of their sections. Men move individually at a run toward their section leader and assemble by squad in column of twos in his rear, squads in the same relative order as in normal formation of the section in close order, p. o.'s. at the head of their squads.

Section guides follow in rear of their respective sections to insure the prompt and orderly execution of the advance.

THE ASSEMBLY

Being in skirmish line, to assemble the platoon:

The platoon leader takes post at, or designates, the point at which the platoon is to assemble and signals:
1. Assemble, 2. **MARCH**.

The platoon assembles in column of squads, in the same relative order as in the normal formation of the platoon in close order (right in front).

The leading squad assembles as prescribed in the School of the Squad at the designated point. Men of other squads move individually at a run toward the assembly point, p. o's placing themselves in their normal position in column of squads in rear of the p. o. of the leading squad, each squad assembling on its squad leader. Section leaders, guides, and runners take their prescribed posts.

If assembled by squads or sections or in section or squad columns, these are conducted to the assembly point and formed in their normal relative order by squad or section leaders.

Sections may be assembled by the command:

1. Sections, assemble, 2. **MARCH**.

Executed by each section as prescribed for the platoon.

Squads may be assembled by the command:

1. Squads, assemble, 2. **MARCH**.

Executed by each squad as described in the School of the Squad.

One section or one or more squads may be assembled by the command:

1. (Such) Section (or Squad(s)), assemble, 2. **MARCH**.

ADVANCE BY RUSHES

Being in skirmish line, to advance by rushes:

The platoon leader indicates the line or cover to be reached, if practicable, and commands:

1. By section (squad, four men, etc.) from the right (left), 2. **RUSH.**

The leader of the indicated fraction gives the commands:

1. Cease firing, 2. **PREPARE TO RUSH.** The men of the fraction indicated cease firing, and hold themselves in readiness to spring forward instantly, taking care not to betray to the enemy by any movement of the body or the rifle the fact that a rush is about to take place. Each man takes his rifle in his left hand, supports himself on his right hand, draws up the right knee close to the body without raising the trunk from the ground. When ready, the leader of the rush commands UP, the leader and his men spring to their feet and, running at top speed, gain the new position, where they throw themselves on the ground and open fire. The leader of the rush selects the new line if it has not been previously designated.

The first fraction having established itself on the new line the next like fraction is sent forward by its section leader, without further command of the platoon leader, and so on, successively, until the entire wave is on the line established by the first rush. The platoon leader may direct that successive fractions execute the rush only upon his signal.

WHISTLE SIGNALS

Attention to orders.—Sound a *short blast* of the whistle. The signal is used to fix the attention of troops

or of their commanders and leaders, preparatory to giving commands, orders, or signals.

When in charge of a portion of the firing line, each squad leader will fix his attention upon his platoon or section leader for signals at the short blast of a whistle. If the squad leader's attention is attracted by a whistle other than that of his platoon or section leader, or if he receives no orders or commands to give to his squad, he will return his full attention to his squad or group at once.

Suspend firing.—Sound a *long blast* of the whistle. This signal will be verified at once by an arm-and-hand signal or by other means.

Limitation as to number of whistle signals.—Whistle signals other than the two given above are prohibited.

GENERAL ARM-AND-HAND SIGNALS

Forward, MARCH: by the right (left) flank, **MARCH;** to the rear, **MARCH.**—Face and move in the desired direction of march; at the same time extend the hand vertically to the full extent of the arm, palm to the front, and lower the arm and hand in the direction of movement until horizontal.

Halt.—Carry the hand to the shoulder, palm to the front; then thrust the hand upward vertically to the full extent of the arm and hold it in that position until the signal is understood.

Lie down; or, take cover.—Turn toward the unit or group and raise the hand, palm down, in front of the elbow, forearm horizontal; thrust the hand downward and back to this position several times, holding the wrist rigid.

Double time, MARCH; or, RUSH.—Carry the hand to the shoulder, fist closed; rapidly thrust the fist upward

vertically to the full extent of the arm and back to the shoulder several times.

Quick time, MARCH.—Raise the elbow to a position above and to the right (left) of the shoulder and extend the forearm to the left (right), hand above the head, palm to the front.

Change direction, MARCH.—Carry the hand that is on the side toward the new direction across the body to the opposite shoulder and, with the palm down and the forearm horizontal, swing the forearm in a horizontal plane, extending the arm and hand to a point in the new direction.

As skirmishers, MARCH.—Raise both arms laterally until horizontal, arms and hands extended, palms down. If it is necessary to indicate direction of march, signal **Forward, MARCH**, moving at the same time in the desired direction.

As skirmishers, right (left), MARCH.—Raise both arms laterally until horizontal, arms and hands extended, palms down; swing the arm and hand on the side toward which the deployment is to be made, upward until vertical and back immediately to the horizontal position; repeat swinging movement several times; hold the other arm and hand steadily in the horizontal position until the signal is to be completed.

Assemble, MARCH.—Raise the hand vertically to the full extent of the arm, fingers extended and joined, and describe large horizontal circles with the arm and hand.

Range; or, change elevation.—Announce the range by extending the arm fully toward the leader or men for whom the signal is intended, with the fist closed; open the fist, exposing the palm and fingers to the leaders or men, once for 500 yards, twice for 1,000 yards, and

so on; move the fist upward, wrist rigid, and back to the range, announcing position once for each 100 yards up to 500 and for each additional 100 yards above 500 or the multiples of 500; describe a short horizontal line with the arm, fist closed, to add 50 yards. Change elevation by indicating the complete new range.

Are you ready? or, I am ready.—Extend the arm toward the leader for whom the signal is intended, hand raised, fingers extended and joined, palm toward the leader.

Commence firing.—Extend the arm and hand horizontally in front of the body to their full extent, palm of the hand down; move them several times through a wide horizontal arc.

Fire faster.—Execute rapidly the signal **Commence firing**. For machine guns, a change to the next higher rate of fire is required.

Fire slower.—Execute slowly the signal **Commence firing**. For machine guns, a change to the next lower rate of fire is required.

New target.—Extend the arm and hand to the front, palm of the hand to the right (left); swing them to the right (left) to point in the direction of the new target.

Suspend firing.—Raise the forearm to a horizontal position in front of the forehead, palm of the hand to the front; hold the forearm steady until the signal is understood.

Cease firing.—Raise the forearm as in **Suspend firing** and swing it up and down several times in front of the face.

Section.—Extend the arm and hand toward the section leader, palm of the hand down, and describe large vertical circles with them.

Squad.—Extend the arm and hand toward the section leader, palm of the hand down; distinctly move the hand up and down several times from the wrist, holding the arm steady.

Section or squad column.—Execute the signal for Section or Squad; drop the arm and hand to the side and immediately swing them, extended, in a pendulum movement straight to front, not higher than the shoulder, and back again to the side.

Fix bayonet.—Simulate the movement of the right hand in executing Fix bayonet.

Assault fire.—Extend the arm and hand to the front, palm of the hand up; move them upward, describing an arc of about 45° ; then signal **Forward, MARCH.**

CHAPTER 57

THE USE OF COVER; HASTY ENTRENCHMENT UNDER FIRE

The skirmisher can not give too careful attention to the use of cover. In taking advantage of natural cover he should be careful to select a position from which he can fire easily and effectively upon the enemy. If advancing on an enemy he must do so steadily and rapidly. He must conceal himself as much as possible while firing and while advancing. While setting his sight he should be under cover or lying prone. He should fire around the right side of his concealment whenever possible, or, when this is impracticable, he should rise enough to fire over the top of his concealment. A natural cover can sometimes be adapted for a firing position by the use of the intrenching tool.

The skirmisher should not remain concealed in one place too long, but should advance from cover to cover, selecting another cover before leaving his concealment. A man running rapidly toward an enemy furnishes a poor target.

When fired on while acting independently he should drop to the ground, seek cover, and then endeavor to locate the enemy.

The skirmisher, when acting as a member of a fire unit, should he find himself on ground unsuitable for firing because of lack of visibility or poor cover, at once must move to the nearest favorable locality, avoiding, however, such extensive changes as would blanket the fire of others.

HASTY ENTRENCHMENT UNDER FIRE

The work must be done by the men lying prone on the left side.

Men first shift their positions as necessary to obtain a clear field of fire to the front. The work is then executed as follows:

Lie back about 2 feet from the selected position and to the left of it, head at the point *X*, Figure 289. Tear up any vegetation available, and heap it up loosely as a screen at full arm's length to the front.

Lying on the left side and using the intrenching tool, hack the earth loose into a furrow about $1\frac{1}{2}$ feet to the right of the body and extend it as far to the front and rear as possible. Scoop out the earth and heap it close in front of the left eye and shoulder.

Dig toward the body from the original furrow so that the blade of the intrenching tool is worked under the hard surface crust. Continue to scrape the earth toward the parapet and to widen the trench until it is about $1\frac{1}{2}$ feet wide. Any lumps available should be used to build up the near edge of the parapet as steeply as possible. The earth should be so disposed as to thicken the parapet in a line between the head and the point from which the most accurate fire appears to come, or, if necessary, extend the parapet in the shape of a horseshoe around the front of the trench.

When the depth of the trench reaches about 6 inches in front and 12 inches in rear, and the parapet is 6 inches high and bullet-proof (a thickness equal to the length of the rifle is sufficient), some vegetation if any is available, should be scattered over the parapet to conceal the fresh earth.

Each man must be ready to lay down his intrenching tool and to resume firing with his rifle at any stage of the work.

Adequate cover at close range can not be obtained in less than 35 minutes. This form of trench is ineffective against shrapnel fire. A rifle pit from 1½ to 2 feet deep and as narrow as practicable, with a parapet

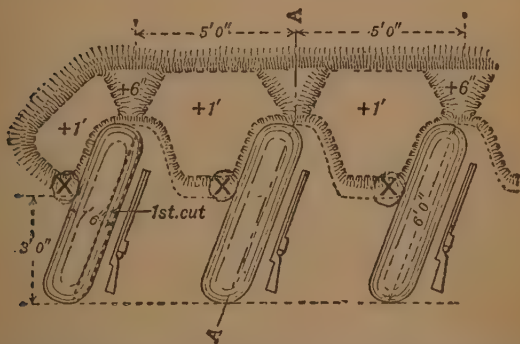


FIG. 289. -Early stages of intrenchment by riflemen lying prone in the open, using intrenching tool under fire. If under shrapnel fire all efforts should be directed toward making a deep hole and not a shallow trench.

about 1 foot high, is the best hasty shelter against artillery fire.

To construct such cover from the skirmisher's trench, excavate the pit at the point occupied by the elbows, until sufficient cover has been obtained.

PART SEVEN
MISCELLANEOUS

CHAPTER 58

SUBMARINE SERVICE—AVIATION SERVICE— NAVAL RESERVE—NAVAL TRAINING COURSES—DUTIES OF A PETTY OFFICER— DISPOSITION OF EFFECTS OF DESERTERS, DECEASED MEN, AND MEN GOING ON LEAVE

SUBMARINE SERVICE

This branch of the Navy has become a most important arm of the fleet. During the last war the submarine played a valuable part. From a small, frail craft the submarine has developed into a formidable fighting ship. The latest type, the V boats, are as long as destroyers, have a crew of about 80 men, and, in addition to their 21-inch torpedoes, they carry a 4-inch gun. They can make a speed of 18 knots on the surface and about 8 knots submerged. The next smaller type, the S boats, mount a 4-inch gun, are about 230 feet long, and are manned by a crew of about 42 men.

Besides those on the Atlantic and Pacific coasts, there are submarines at Coco Solo, Canal Zone, Honolulu, and Cavite, P. I.

For the training of the men in this service there is a submarine school at New London, Conn. This school offers special instruction in submarines, which includes courses in Diesel engines, radio, electricity, and sound.

While in this service enlisted men receive additional compensation of \$5 a month. Furthermore, if a man

"qualifies" he is entitled to a dollar for every dive that is made, up to and including 15 dives a month. However, only one pay dive can be made in a day. As a submarine must make 90 submerged hours a year, opportunity is afforded for each qualified man to earn \$15 additional a month.

To "qualify" as a submarine man certain requirements must be fulfilled. He must have served at least six months on submarines. Before presenting himself for examination the candidate must submit a notebook. This book must contain all data specified by Submarine Instructions. The examination is an oral and practical one. It consists in going through the boat and operating all apparatus in the boat and answering any questions pertaining to the same. A commissioned officer conducts the examination.

On a submarine a wonderful opportunity is afforded for getting much practical knowledge of electricity particularly in regard to storage batteries. These batteries are the largest of their kind found anywhere to-day. Nearly all apparatus is electrically operated including the main motors for underwater propulsion, steering and diving rudders, gyro compass, pumps, galley range, and anchor gear. A submarine also is the best place in the Navy for obtaining valuable experience with Diesel engines, which are used for its motive power on the surface. This type of internal combustion engine is becoming prevalent in the merchant marine service and in many of our shore radio stations.

AVIATION DUTY

Aviation duty in the Navy provides one of the most fascinating and instructive service careers that an enlisted man can have. Aviation activities are carried

on both in the fleet and ashore. As a large part of the work must be done ashore, this provides for changes of station, with a goodly portion of shore duty. Aviation units are to be found on both coasts of the United States, in Panama, Hawaii, and wherever else the ships of the fleet may be.

Enlisted men are trained as pilots at the naval air station, Pensacola. Here they are given a thorough and comprehensive course of flight training. Those who do not receive this flight training get thorough instruction in the upkeep and overhaul of all kinds of airplanes, including power plants and accessories. Some men specialize in certain branches, such as ignition, carburetion, instruments, and machine guns.

Many opportunities are offered for flights on the part of enlisted men, whether they are pilots or members of a plane crew. Aviation pilots and such members of plane's crew as are designated for flight orders receive in addition to their regular pay an increase of 50 per cent of base pay.

Pilots are of three classes—naval aviation pilot, aviation pilot, first class, and chief aviation pilot. The last two are ratings.

An enlisted man who has completed the full course of training for a naval aviation pilot at Pensacola and is recommended to the Bureau of Navigation for the designation of "naval aviation pilot" by the commandant, naval air station, Pensacola, is placed on the eligibility list in the Bureau of Navigation. As soon as he has flown alone not less than 75 hours in heavier-than-air craft and has flown in heavier-than-air craft a total of not less than 200 hours during his naval service, and when recommended by his commanding officer, he will be designated by the Bureau of Navigation as a "naval aviation pilot."

All enlisted men, who have successfully completed the full course of instruction in practical and theoretical heavier-than-air flight training at Pensacola or any authorized station in accordance with the prescribed syllabus for aviation pilot training at that station, and who have flown alone in a heavier-than-air craft not less than 75 hours and have flown in heavier-than-air craft a total of not less than 200 hours during their naval service, and who are so recommended to the Bureau of Navigation by their commanding officers, may be promoted to or have their rates changed to "aviation pilot" by the Bureau of Navigation after meeting the following requirements:

(a) If the man is a chief petty officer:

(1) Pass a satisfactory examination in articles D-5231 and (2) D-5215 in Bureau of Navigation Manual.

After meeting the above requirements, the Bureau of Navigation will place the chief petty officer's name on an eligibility list for change of rating to chief aviation pilot.

(b) If the man is a petty officer first class of any rating:

(1) Pass satisfactory examination in subjects directed in Bureau of Navigation Manual, articles D-5201, D-5202, D-5215, D-5231 (1).

Such men are put on the eligibility list for change of rating to aviation pilot, first class.

(c) If the man is not a chief petty officer or petty officer, first class:

(1) Pass a satisfactory examination in the requirements of articles D-5201, D-5203, D-5215, and D-5231 (1) in the Bureau of Navigation Manual.

In order to be assigned to a school for pilots a candidate must be recommended by his commanding officer, must be less than 29 years of age (except men who are especially well qualified and have had previous aviation experience the maximum age is 31), and must agree to extend enlistment or reenlist in order to have three years to serve upon completion of course. His request is sent to the Bureau of Navigation, which makes the final selection from its eligibility list.

The aviation machinist and mechanic school is at Great Lakes. The usual requirement for any school listed in the Bureau of Navigation Manual applies for this training.

Aviation provides training for mechanics of the highest grade and qualifications. It includes machine-shop work, assembly and inspections of engines, and special work as welding, plating, and test stand running.

THE NAVAL RESERVE

The Bureau of Navigation takes this opportunity to call the attention of the service in general to the provisions of the new naval reserve act, which became effective July 1, 1925, and also to the Naval Reserve Regulations promulgated thereunder by the department, which may be found in all ships' libraries as Part II, Bureau of Navigation Manual.

It is hoped that under the provisions of this act the sea power of the United States may be materially increased, since officers and men who leave the service under honorable conditions and who still desire to retain some connections therewith may do so by join-

ing the reserve in the particular capacity for which they are qualified, and in so doing the experience which they have gained and the loyalty which they have given to the service will be continued and not lost to the country.

The training duty required of reservists in order to maintain efficiency should serve to keep alive that love of the sea and the sea life which caused the individual to enter the regular or reserve service.

It should be noted that this act creates three classes of reserves, viz, Fleet Reserve, Volunteer Reserve, and Merchant Marine Reserve, which may be briefly and broadly summarized as follows:

The active Fleet Reserve consisting of drilling and training units for officers and F-1 men entering largely from civil life. The inactive Fleet Reserve consisting of former enlisted men of the Navy who, except for occasional periods of training, may be regarded as in a retired status. However, both the active and inactive branches of the Fleet Reserve are designed to furnish crews, immediately upon mobilization, for certain combatant ships (largely of the destroyer type, or auxiliaries) of the Navy. The Fleet Reserve also contains a number of aviation squadrons and divisions.

The Volunteer Naval Reserve represents an inactive organization of trained individuals of which the general service class will go largely to combatant ships of the Navy upon mobilization, while the special service or technicist class, being composed of men prominent in civil pursuits, will be called upon to assist in developing the shore organization of the Navy. In view of various misconceptions as to the status of the

volunteer reservist, it may be pertinent to state that the fundamental difference between the fleet reservist and the volunteer reservist is merely that one is a member of an organization trained as an organization while the other is a member of a reserve of trained individuals.

The Merchant Marine Naval Reserve is composed of officers and men who follow the sea as a profession and should be of the utmost value as an adjunct to the national defense in time of war.

The bureau notes that many former officers and men of the regular service have, from time to time, gone into the merchant marine, and the bureau is particularly proud of the fact that many former enlisted men of both deck and engine room ratings have not only passed the professional examinations required by the Department of Commerce for licensed officers, but that many now hold very responsible executive and administrative positions in the merchant marine. It is thought that future developments may open up possibilities of a career in the Merchant Marine Reserve to the enlisted man of the Navy who is ambitious to study and improve himself professionally.

There is a very vital principle in connection with the Naval Reserve which should be always borne in mind and which is strongly evidenced by the maritime policies of various world powers, namely, it should be the aim to strengthen our Navy so far as possible by means which least tend to stimulate rivalry in the maintenance of armaments. A force in reserve does not provoke to retaliatory measures in any great degree.

Every officer and man of the regular service should bear in mind the possibility of being called upon to

serve either in or with the reserve, and he is therefore to cooperate and aid in every possible way in promoting the efficiency of the reserve; since with every shrinkage which may be brought about by international reduction in the regularly established services of defense, the function of the trained reserve is being correspondingly increased in importance.

FLEET NAVAL RESERVE

For the information of the service there is added hereto a brief statement showing in considerable detail of what classes of men the Fleet Naval Reserve is composed, viz:

H-2202, Bureau of Navigation Manual, enlisted men of the Fleet Naval Reserve. The enlisted personnel of the Fleet Naval Reserve shall be composed of:

(a) Men enlisted in the Naval Reserve for four years, or with extended enlistments, who are transferred to the Fleet Naval Reserve. (Secs. 4, 22, 23, and 26 of the act.) (Class F-1.)

NOTE.—Made up of men enlisted direct in class F-1. of the Naval Reserve or men transferred thereto from the Volunteer Naval Reserve.

(b) Men who are assigned by the Secretary of the Navy for four years' service in the Naval Reserve after one or more complete enlistments in the Regular Navy. (Class F-2.)

NOTE.—These assignments must be consummated immediately after discharge from the Navy and by the commanding officer issuing the discharge, but only in those ratings prescribed from time to time by the Bureau of Navigation.

(c) Men who, previous to July 1, 1925, were transferred from the Regular Navy to the Naval Reserve Force after 16 or 20 years' naval service and were

further transferred from the Naval Reserve Force to the Naval Reserve on July 1, 1925. (Class F-3.)

(d) Men who served in the Navy prior to July 1, 1925, who were either in the Navy or Naval Reserve Force on that date or who reenlist with continuous service after that date and thereafter transfer to the Naval Reserve after 16 or 20 years' service in accordance with article H-2416, Bureau of Navigation Manual. (Class F-4.)

(e) Men who first enlist in the Navy after July 1, 1925, or who reenlist with broken service after that date and transfer to the Naval Reserve after 20 years' naval service. (Class F-5.)

There are three ways in which enlisted men may enter the Naval Reserve:

1. By assignment to the Fleet Naval Reserve.
2. By enlistment in the Naval Reserve.
3. By transfer to the Fleet Naval Reserve.

Enlisted men of certain ratings, as authorized by the Bureau of Navigation from time to time, may be assigned to the Fleet Naval Reserve, class F-2, for a period of four years upon the termination of their enlistment in the Navy. Such assigned men are paid in advance \$25 each year. If they reenlist in the Navy within three months of their discharge they must refund the \$25 they received for the first year. They can not be called to active duty in time of peace except with their own consent.

Men of class F-2 will not be attached to divisions of the Fleet Naval Reserve nor will they be allowed to perform equivalent or appropriate duty.

Enlisted men, after discharge from the Navy and recommended for reenlistment, may, in the discretion of the commandants of naval districts, be enlisted in

the Naval Reserve either in class F-1 or in the Volunteer Naval Reserve, for a period of four years. Those who enlist in the Fleet Naval Reserve and are attached to divisions receive one day's pay of their rating for the performance of each drill or period of equivalent instruction or duty. They may not, however, be enlisted in the Fleet Naval Reserve unless there are vacancies for them in the Naval Reserve organizations to which they are to be attached, and also subject to the approval of the commanding officers of such organizations.

Enlisted men assigned to the Fleet Naval Reserve or who enlist in the Naval Reserve within three months of discharge from the Navy keep their continuous service rights with the exception that, if they reenlist in the Navy after three months from their discharge, they will be reenlisted in the rating held at time of discharge only if vacancies exist in that rating and if such ratings are open to broken-service men at the time of their reenlistment.

Enlisted men serving in the Navy on July 1, 1925, or who reenlist with continuous service after that date may be transferred to the Fleet Naval Reserve, class F-4c, after 16 years and to class F-4d after 20 years' naval service. They make application to the Bureau of Navigation through their commanding officer for such transfers to the Fleet Naval Reserve.

The following are examples of the monthly pay received by such men:

Rating	F-4c 16 years	F-4d 20 years
Seaman, first class	\$31.30	\$44.35
Petty officer, first class	48.80	69.10
Chief petty officer (PA)	73.30	103.75

Enlisted men who were not serving in the Navy on July 1, 1925, and who reenlist with broken service or who enlist for the first time after July 1, 1925, may be transferred to the Fleet Naval Reserve, class F-5d, on their own application, only after 20 years' naval service. Such men of the ratings indicated receive monthly pay as follows:

Rating	F-5d
Seaman, first class.....	\$26. 80
Petty officer, first class.....	41. 80
Chief petty officer (PA).....	62. 80

Enlisted men who were transferred to the Fleet Naval Reserve after 16 or 20 years' naval service may be retired after 30 years' service. All naval service counted for transfer to the Fleet Naval Reserve and all time in the Fleet Naval Reserve after transfer is counted for retirement.

Fleet reservists on the retired list after 30 years' service receive monthly pay as follows:

Rating	F-4c Retired ¹	F-4d Retired	F-5d Retired
Seaman, first class.....	\$47. 05	\$60. 10	\$56. 05
Petty officer, first class.....	64. 55	84. 85	78. 55
Chief petty officer (PA).....	89. 05	119. 50	110. 05

¹ Rates presuppose more than 16 years' service for pay purposes at the time of transfer but do not include credit for extraordinary heroism in line of duty.

NOTE.—The hospital fund of \$0.20 per month has been deducted from all of the above rates of pay.

NAVY TRAINING COURSES

In order to assist enlisted men in advancing themselves in rating or in learning a trade, and to improve

their general education the Bureau of Navigation issues over 100 different training courses. These courses are issued without charge to any enlisted man who requests them. Study is carried on under the direction of officers and petty officers of all ships and stations and necessary assistance is given them.

In developing the Navy training courses, the bureau of Navigation has endeavored to meet the most important needs of enlisted men in the service. The courses now issued are divided into three general classes as follows:

1. **General educational courses.**—These courses cover thoroughly many subjects usually taught in elementary schools and high schools. There are courses in mathematics, ranging from simple arithmetic to trigonometry and calculus. There are courses in history, English, geography, physics, chemistry, and other general educational subjects, offering to the man in active naval service the same chance to learn that he would have in a good elementary school or high school.

These courses are supplied to meet the needs of many ambitious men in the service who wish to improve their general education. There are many others who find that they need a better knowledge of mathematics or some other fundamental subject, in order to meet the requirements of an advanced rating for which they wish to be examined.

2. **General technical courses.**—These courses cover such subjects as practical electricity, gas engines, steam turbines, boiler operation, refrigeration, compasses and piloting, pharmacy, and shorthand. Each of the general technical courses now supplied by the Bureau of Navigation is closely related to the work in some branch of the service and is intended to promote the

efficiency and advancement of men in some naval rating. The list of subjects include many that are taught in the best technical schools and the man who is willing to supplement the experience gained in his daily work by systematic study along the same line usually succeeds.

3. Rating courses.—A rating course is intended to cover the exact requirements of the rating for which it is written. It brings together in compact and convenient form the information that will enable a man to meet the requirements for his rating, as these requirements are laid down by the Bureau of Navigation Manual. No other study that an enlisted man can do will have so direct a bearing upon his efficiency and success in the service as a thorough study of the course issued for his own rating or a rating for which he is preparing himself.

It is recommended that not more than two courses be taken at one time. A man should select subjects closely related to his work. To obtain any benefit from these courses it is necessary that a regular system of study be carried out. A half hour or an hour a day in a quiet place is sufficient time if the mind is kept on the subject and there is a determination "to dig at it." If a lesson can not be understood, a consultation with some other man taking the same course or a chief petty officer or an officer should be held at some convenient time. In a short time this study will become interesting and the more one works the better it will be liked.

The short cut to success in any trade is a thorough knowledge of that trade. A Navy training course will give you practical training, will help you to a higher rating, and will better fit you for life. Experience alone is a slow teacher. To learn to do solely by doing

and to find the best way through the trial and error method is a wasteful procedure. A simple form of technical instruction plus experience is a more rapid and satisfactory method of training. With a few months' study of the Navy training courses, advantage may be had of the lifetime experience of other men in the various technical lines.

THE DUTIES OF A PETTY OFFICER

The rating badge of a petty officer includes not only the specialty mark of a particular rating but also the insignia of all petty officers, the eagles and chevrons. The specialty mark stands for proficiency in a certain line of work. The petty officer insignia stands for the military duties, the authority, and the responsibilities which are such important parts of every petty officer's rating.

As a specialist, you will be called upon to do the work of your rating in an efficient manner. As a petty officer, you are the direct representative of the commanding officer of your ship or station, and will be called upon to carry out his orders faithfully and fully. Consequently there is an added responsibility given to you when you are rated a third-class petty officer, and you must understand and accept these responsibilities. You have started to climb the ladder which leads to success. You will have new duties and responsibilities, but you will be given also added authority and privi-

 This article is written to make very plain to you the duties you will have in common with all other petty officers; duties which are military in character and which all petty officers must know.

When you are given a petty officers' rating you must realize that your position has been radically changed. As a nonrated man you were expected to carry out orders and do such work as was given to perform. As a rated man, however, you will be expected and required not only to carry out orders given to you by proper authority but also to issue orders to nonrated men and to supervise their work. With each promotion the proportion of supervisory duty becomes greater. Hence you must understand some of the qualities which must accompany this exercise of authority.

As a petty officer you must always remember that this rating carries with it the necessity of showing in yourself a good example of subordination, loyalty, courage, energy, sobriety, neatness, and attention to duty.

Nonrated men will not keep their clothing neat if you appear before them habitually slouchy, dirty, or unkempt.

The orders given by you will not be obeyed willingly and promptly if you are at all insubordinate to other petty officers of higher rating or to commissioned officers.

Work will not go on energetically in a division or part of the ship, if you are not "on the job" so far as your own duties are concerned—particularly if you are forever trying to do as little as is necessary to "get by." There is no more damning fact in a petty officer's unwritten record than a reputation for doing his work just well enough to "get by" with it.

The successful petty officer always remembers that he is a leader of his squad, whether it is large or small, and that to get good work done he himself must do good work.

The necessity for setting a good example applies not only to conduct and actions on board ship but also to liberty ashore. An offense committed by you as a petty officer ashore or afloat is much more serious than the same offense committed by a nonrated man. As a petty officer you can often prevent others from unseemly conduct when on shore by your good advice and counsel.

The first requirement of all petty officers is loyalty. Loyalty includes obedience. It has truthfully been said that of all the many qualities that a petty officer must possess, none is so important as loyalty. Loyalty just means a true, willing, and unfailing devotion to a cause. To you as a loyal petty officer, orders are orders and as such are to be obeyed regardless of your opinion as a petty officer as to their wisdom. Even though you happen to disapprove these orders, it is your duty and your job either to carry out your orders yourself or to transmit them to your men just as heartily and earnestly as though you fully approved of them. Do not criticize. Any criticism of yours will affect your division, the ship's spirit, and the opinion and respect of the men under you. The final test of loyalty is this: Can you be a leader by your cheerful and unfailing obedience to all orders regardless of how you feel about them? As a petty officer, if you do not do this, you fail as a petty officer; you are disloyal to both your officers and your men; and sooner or later you will lose their respect.

The second requirement is justice. Justice does not mean severity or bullying.

It means simply that all men under you should be treated fairly.

That no favorites should be played.

That unnecessary and foolish orders will not be given simply to show your authority.

That a chance to carry out an order will be given before the demand is made that the work connected with the order be finished.

A third requirement is **initiative**. Initiative means that you are able to do your own thinking. You must be able to act without supervision after you have been given an order to do something. You must be able to foresee the need of doing a thing without having your attention called to it. And this applies not only to your own department of the ship but to the whole ship. You may be a radio man or a carpenter's mate, but if you see the gripes on the lifeboat slack and see the boat swinging at the davits, your initiative, your duty as a petty officer requires you to call the attention of the boatswain's mate of the division to that condition in order that it may be corrected without delay. This means that you must cultivate judgment and that you must know the technical side of your rating.

Other requirements are **simplicity, self-control, tact, enthusiasm, reliability, honor, and truthfulness**. Be yourself; be human. Do not assume a high and mighty attitude just because you have a "crow" on your arm. Be calm. Never lose your head. Be patient. Remember that you do not have to yell at a man when you give him an order; the louder you shout, the less you are respected. Make sure your orders are understood and be patient with the man who is slow to interpret them. Be gentlemanly in all your actions. It has been said that a gentleman is "a man who is never unintentionally offensive to others." This applies to your relations with your officers and the men under you.

Be tactful.—Study the personal traits of your officers and your men. Imitate the successful ones. Put some enthusiasm into your duties. Be energetic. Unless you are interested in your work, unless you feel that you are an important member of the ship's company, you can not succeed.

Stick to your job, no matter how hard it is. Be reliable. Be trustworthy. Get the reputation of carrying out orders to last detail, of never failing to accomplish what you set out to do. Be sincere in all your efforts to do everything well.

Be honorable and truthful.—The words "honor and truthfulness" can not be qualified. There are no "ifs" and "buts" connected with them. A petty officer who is not honorable and truthful can never succeed, no matter what other qualifications he may have.

Know your job.—You can not expect the men under you to know how things should be done if you yourself can not do them correctly and tell them how to do them. As soon as you know your own job, study the job next ahead of you. You may be called upon to handle it at any time without advance notice. It is unfair to the men under you to be forced to bear the consequences of either your own ignorance or carelessness. If you can not get results, study yourself. The fault may be there.

Point out the defects which you notice and administer reproofs personally. When you see a man doing his work well, commend him at once, help him along. If you see some one doing his work badly or carelessly, censure him fairly and personally. Do not bawl him out to the whole world. Listen to helpful suggestions from your men. You will get many helpful ideas from them. Assign the work to your men in accordance with their personal abilities. Do not take out personal grudges on your men—it will not work.

Remember that the commissioned officers, especially those who are in closest contact with you, know you better than you realize. You can not bluff; you can not fool them all the time, even though you may do so occasionally. They know your ability to do the work that you are supposed to do.

These are the qualities which govern your advancement. Study yourself. Are you really hitting the ball? Do you measure up to the standard set by the successful officers and leading petty officers on your own ship? Are you better than the average in the Navy? If you are, you are on the road to success. If you are not, you will remain a third-class petty officer as long as you remain in the Navy.

Cultivate the habit of study and of outside reading. You can always make time for these. Your ship or station library has many good books which you should read. Do not be content to stay "in a rut." Pull yourself out by your own efforts.

Keep yourself fit physically.—You can not expect to do your best work if you are not in the best physical condition.

SHORE PATROL

You are a petty officer because your officers have confidence in your ability to perform military duties. Regardless of your specialty, it is probable that one of the first military duties you will be required to perform will be shore patrol.

Perhaps the establishment of the shore patrol has done more than any other one institution to make petty officers realize their duty as a class. As a rule, irrespective of specialty, they have all worked together in insuring the proper conduct of liberty parties and

winning respect for the uniform on shore in foreign and home ports. It is most important that a candidate for examination as petty officer thoroughly understand the details of this duty.

The following facts should be known by all petty officers of the patrol:

(a) The shore patrol is the force landed from naval vessels to maintain order among liberty men.

(b) It is usually composed of petty officers from each ship, under the command of officers.

(c) The members of the shore patrol must become acquainted and familiar with each other by sight, name, and rating, so that they may work together efficiently.

(d) They must study the local situation so that they may know how to carry out the orders of the patrol officer intelligently.

(e) They must bear in mind that the seriousness of indulging in intoxicating liquor while on duty is such that it is an offense which is punishable by general court-martial.

(f) In each situation they must know when to arrest a man and what to do with him after they arrest him. When a man is making a disturbance, the usual procedure is to arrest him at once. If you are unable to get him to the headquarters of the patrol (usually a police station of the town), call for assistance from one of the patrols near by. Patrols usually work in pairs, or if this is not possible they keep in touch with each other in order to give quick assistance in case of trouble. In the event of an emergency, pick good men out of the crowd and tell them they are on duty to assist you in relieving the condition.

**DISPOSITION OF EFFECTS OF DESERTERS, DECEASED
MEN, AND MEN GOING ON LEAVE****DESERTERS' EFFECTS**

The officer of the division to which the man belonged the "lucky bag clothing."

The master at arms shall take charge of all the effects of deserters. They will be kept separate from inventories the effects. After this inventory the master at arms sees that each article is stamped indelibly and legibly with the letters "D. C." The articles will then be sealed and turned over to the supply officer.

It is customary for the disbursing officer to sell deserters' effects at auction to the highest bidder. This is usually done on the day the man is declared a deserter.

The master at arms and a responsible person attached to the supply division are required to be present at this sale.

The name of every man who buys an article of deserters' effects, the name of the article, together with the price paid, should be recorded and kept in the records of the pay officer.

The master at arms also should keep a permanent record of the names of purchasers and the names of the articles purchased.

No man may buy articles that do not form a part of his uniform. A marine can not buy naval clothing, nor can any man of the Navy buy marine clothing.

EFFECTS OF DECEASED MEN

The master at arms shall take charge of the effects of deceased men. The officer of the division to which the man belonged will then inventory and seal such

effects. They will then be turned over to the supply officer for safe-keeping until such time as they are disposed of as directed by the executive officer in accordance with the Navy Regulations. Perishable articles will be disposed of as directed.

EFFECTS OF MEN GOING ON LEAVE

The master at arms shall receive the effects of men going on any extended leave, and shall be responsible for their safe-keeping.



